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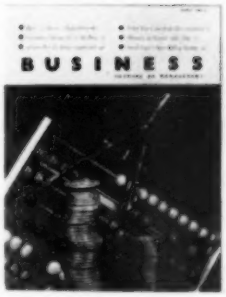
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COVER PICTURE

How profitable is your business? If the abacus can't tell you, perhaps management accounting has an answer (see page 66).

Colour study photographed for BUSINESS by Helen Craig.

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and the ' . . . ', and . . .

Quite a lot, eh ?

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Probably more

I suppose so

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ECONOMIC PROSPECT

Survey and Forecast of Business Conditions

Output Rising

Industrial production, as forecast here, is rising. It is likely to go on doing so, despite the relatively high level of unemployment. More spending by Government and consumers, plus the seasonal increase in business activity, are the main upward stimuli.

The time has come when the economy could benefit substantially from lower interest rates. A gentle stimulus to business expansion need not cause higher prices, in fact it might help to keep them down by enabling overheads to be spread over more production. Also the interest bill for recently invested capital would be reduced.

Sterling Stronger

Firm Government credit control, backed by the still favourable terms of trade, has put the pound on a much sounder footing than during last autumn's crisis. The recent substantial increase in gold and dollar reserves, and the change from a debit to a credit balance with Europe, make it possible for the Government to act more boldly in stimulating production.

Scope for stimulus to the economy is indicated by declining orders for machine tools, the declining level of industrial investment plans, and the Government's firm intention to bring the total level of housing starts down to 200,000 a year.

Retail Prices Steady

Raw material prices continue their slide. Retail prices are generally stable, with a few actually being cut. The prospect of fairly good industrial relations and only a modest rise in wages should make it possible to maintain the price plateau.

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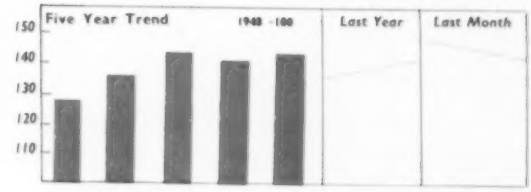
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STATE OF THE NATION

● *Five key indicators to the State of the Nation, followed by 18 indicators to the main economic influences.*

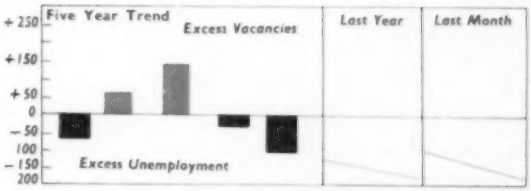
INDUSTRIAL PRODUCTION ▸

Industrial production is rising more rapidly than expected. The index for November last year has been revised upwards 1½ points to 148, thus making it three points more than a year earlier and 15 points more than 4 years earlier. Provisional December figure is 140-141, or 7 to 8 points above a year earlier. This growth has taken place despite a shrinkage in the active labour force, some redundancy and short-time working. Spring should further boost output.



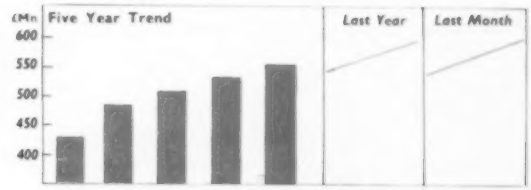
EMPLOYMENT POSITION ▸

Unemployment is higher than for five years. In January there were 175,000 more unemployed than vacancies. This is 76,000 more than a month earlier, 48,000 more than a year earlier, but 55,000 less than five years earlier. Total national percentage of unemployment is only 1.8, but in Wales it is 3.5, in Scotland 3.4, and in Northern Ireland 9.3.



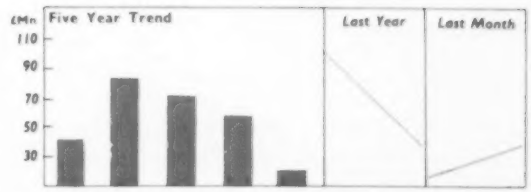
MONEY FLOW ▸

Business money flow has recently risen sharply towards a seasonal peak. Average daily bank clearings for January were £620 million—£23 million above December, £21 million less than a year earlier and £190 million more than four years earlier.



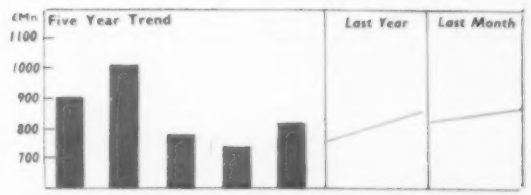
TRADE GAP ▸

Trade gap has widened slightly, but is still less than last year's monthly average. January's excess of imports over exports was £34.7 million, £15.6 million above December's record low, but £68.9 million below a year earlier and £3.6 million below four years earlier. The change since last month is not really significant, and the situation at present is moderately satisfactory.



GOLD AND DOLLAR RESERVES ▸

Gold and dollar reserves have risen substantially. The January total was £859 million—£49 million above December, £113 million above a year earlier, and the highest figure since January 1955 when reserves were £897 million. No special transactions affected the latest figure. The 6.1 million E.P.U. deficit of December has become a favourable balance of £10.5 million in January.



● KEY TO THE CHARTS. Bar charts show the 'Five Year Trend,' taking for each year the average monthly value during the most recent three months. Graph lines for 'The Last Year' compare the most recent month with the same month a year ago. Graph lines for 'Last Month' compare the most recent month with the previous month.

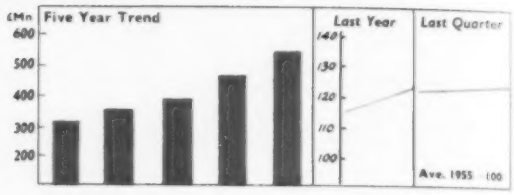
● READERS' ENQUIRIES. Spot enquiries by letter or telephone, involving no research, are answered free. More detailed enquiries will be charged for at cost, on the basis of professional staff time absorbed. This applies to both general management and economic enquiries.

MAIN ECONOMIC INFLUENCES on the STATE OF THE NATION

1. Trends in CAPITAL SPENDING

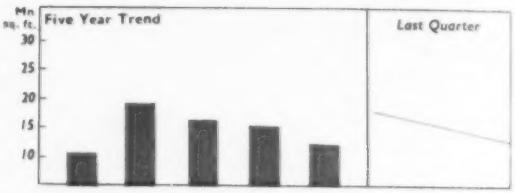
INDUSTRIAL INVESTMENT PLANS

Industrial investment is falling slightly. Even in the third quarter of last year, when investment was still rising, the rate of increase had slackened considerably. The Board of Trade index for the third quarter of last year —124—represents an increase of only 5 per cent compared with a year earlier, as against increases of 13 and 9 per cent in the first and second quarters. Distributive and service trades, however, showed a substantial increase, whilst expenditure by the shipping industry was 29 per cent above the 1956 figure.



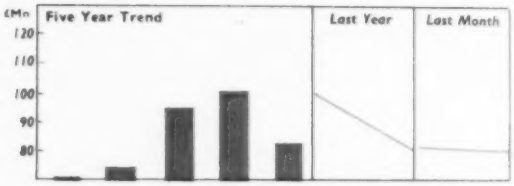
FACTORY BUILDING APPROVALS

Factory building approvals continue to fall. The 13.8 million square feet approved for the last quarter of 1957 was 1.4 million below a year earlier and 5.9 million below three years earlier. Construction this year may be 10 per cent lower in value than in 1957, due to decline in enquiries. If higher prices are allowed for the decline is even steeper in real terms.



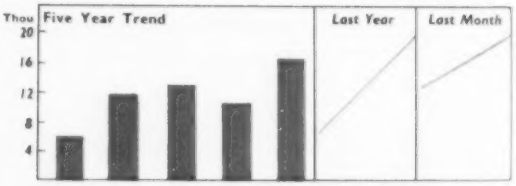
MACHINE TOOL ORDERS

Machine tool orders have fallen slightly, and are lower than at any time since 1952. The November 1957 total of outstanding orders was £80.6 million—£1.7 million less than the previous month and £19.7 million less than a year earlier. Total orders in hand are equivalent to 10½ months' output as opposed to 11½ a year earlier.



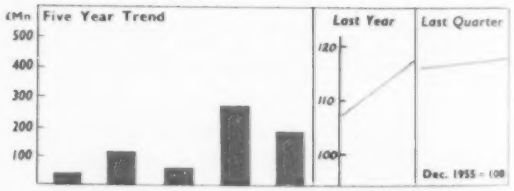
INDUSTRIAL HIRE PURCHASE

Industrial hire purchase has been rising, contrary to seasonal trend. The number of H.P. contracts for new cars and commercial vehicles in January was 19,971—a rise of 5,798 on December, 8,353 on a year earlier and 12,982 on four years earlier.



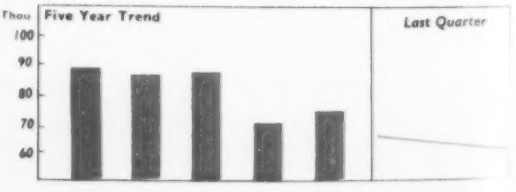
MATERIAL STOCKS

Material stocks have remained substantially unchanged. The Board of Trade index for the third quarter of last year has been revised downwards by 0.7 to 118.5—2.3 above the previous quarter, and 10.1 above a year earlier. The rise is accounted for by increased value of stocks held by metal manufacturing and engineering, backed by smaller decreases by textiles, clothing, food, drink and tobacco.



HOME BUILDING STARTS

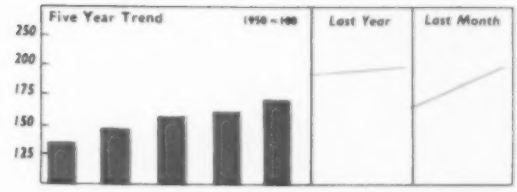
Home building starts continue to decline. National total for the last quarter of 1957 was 61,686—a fall of 12,413 on the third quarter, of 4,705 on a year earlier, and of 20, 493 on four years earlier. Both speculative builders and prospective buyers are finding credit difficult, but the Government's intention to start about 100,000 houses this year should bring a levelling-off in the decline.



2. Trends in CONSUMER SPENDING

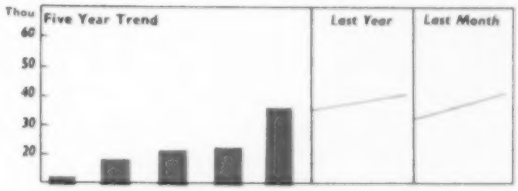
RETAIL SALES

Retail sales are running at a good level. The Board of Trade index for December was 196—27 points higher than November, 7 points higher than a year earlier, and 34 points higher than four years earlier. Three-quarters of the recent rise in sales is due to higher prices. Present indications are that January's figures may show a 5 per cent increase over a year ago.



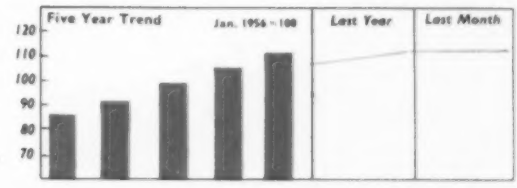
DOMESTIC HIRE PURCHASE

Domestic hire purchase has shown an unexpected seasonal increase. The number of contracts for used cars in January was 40,996—9,579 above December's figure, 6,910 above a year earlier and 23,780 above four years earlier. Sales of household appliances have also risen.



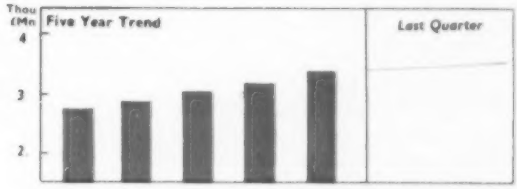
WAGE RATES

Wage rates continue steady after the recent slight increase. The December index was 112—the same as for the preceding two months, but 6 points above a year earlier and 23 above four years earlier. A further rise, in the region of 2 or 3 per cent, is likely this Spring.



PERSONAL EXPENDITURE

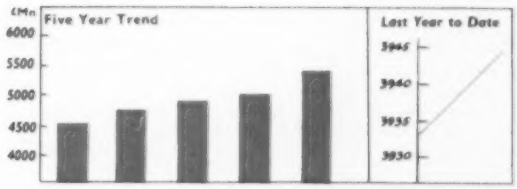
Personal expenditure continues to rise slowly but may soon go up more quickly. Third quarter spending last year was £3,556 million, against £3,395 million a year earlier, and £2,850 million four years earlier. Relatively stable overall prices, plus recent cuts in the cost of some items, may stimulate the volume of consumer buying.



3. Trends in PUBLIC SPENDING

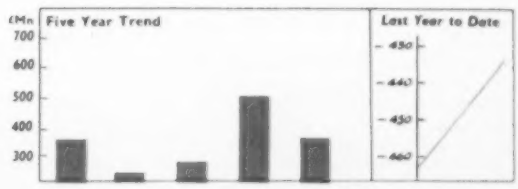
PAYMENTS FROM EXCHEQUER

Payments from exchequer are so far about £12 million less than a year earlier. Total payments to February 1 this year were about £3,933 million, compared with £3,945 million to February 2, 1957. But the total for the current year may be nearly £200 million above the estimates, due to supplementaries for increased pensions and civil service salaries.



EXCHEQUER DEFICIT

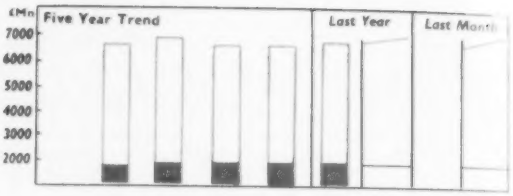
Exchequer deficit is so far about £31 million less than a year earlier. Total deficit to February 1 this year was about £432 million, compared with £463 million a year earlier, £221 million two years earlier and a total deficit for 1953 of £232 million.



4. Trends in CREDIT POLICY

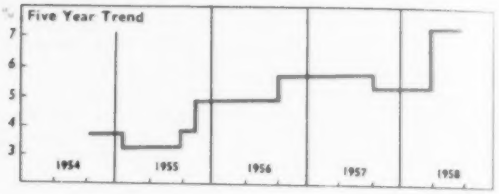
BANK DEPOSITS AND ADVANCES

Bank deposits and advances have both declined still further. January deposits were £6,710 million, or £219 million down on December, but £177 million above a year earlier. Advances were £1,859 million, or £22 million down on December and £5 million down on a year earlier. An increase in advances and further fall in deposits is likely during this tax-paying season.



BANK RATE

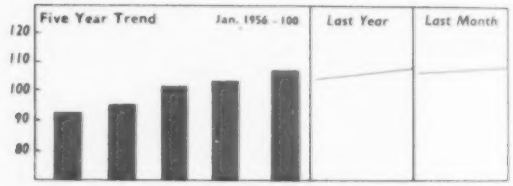
Bank rate, as mentioned previously here, is due for some reduction. Continued wage moderation, further price reductions and the generally strong position of sterling point this way. A reduction is also advisable in order to stimulate investment. Recent movements of the rate are shown on the accompanying chart.



5. Trends in MARKET PRICES

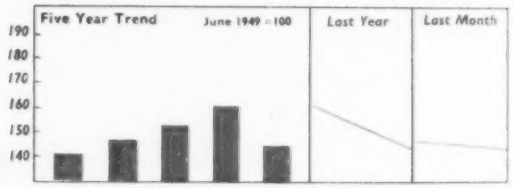
RETAIL PRICES

Retail prices have fallen slightly and may even decline further. The latest available index—for January—was 108.1—a fall of 0.1 on December, but a rise of 3.7 on a year earlier and 10.1 on four years earlier. The slight reduction is accounted for by cuts in the price of petroleum products and paraffin, clothing and eggs. A further fall in the index may follow seasonal cuts in the price of certain perishable foodstuffs.



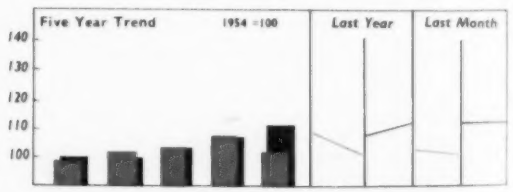
RAW MATERIAL PRICES

Raw material prices are not falling quite so fast as recently. Provisional January index was 142.0—or 1.9 points below the revised December figure, 18.8 below a year earlier, but 1.2 above four years earlier. With no sign of the anticipated U.S. upturn yet, prices may well slide further.



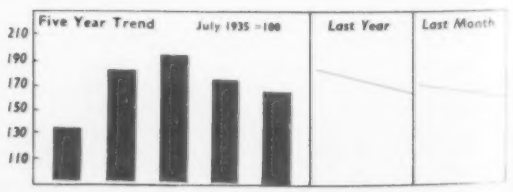
TERMS OF TRADE

Terms of trade have recently been favourable, but there are some signs of approaching stability. December import index, the latest available, was 101—2 points below November, 8 points below a year earlier, but 2 points above four years earlier. December export index stayed at 111—3 points above a year earlier, and 11 above four years earlier. More recent trends could indicate a slightly unfavourable movement.

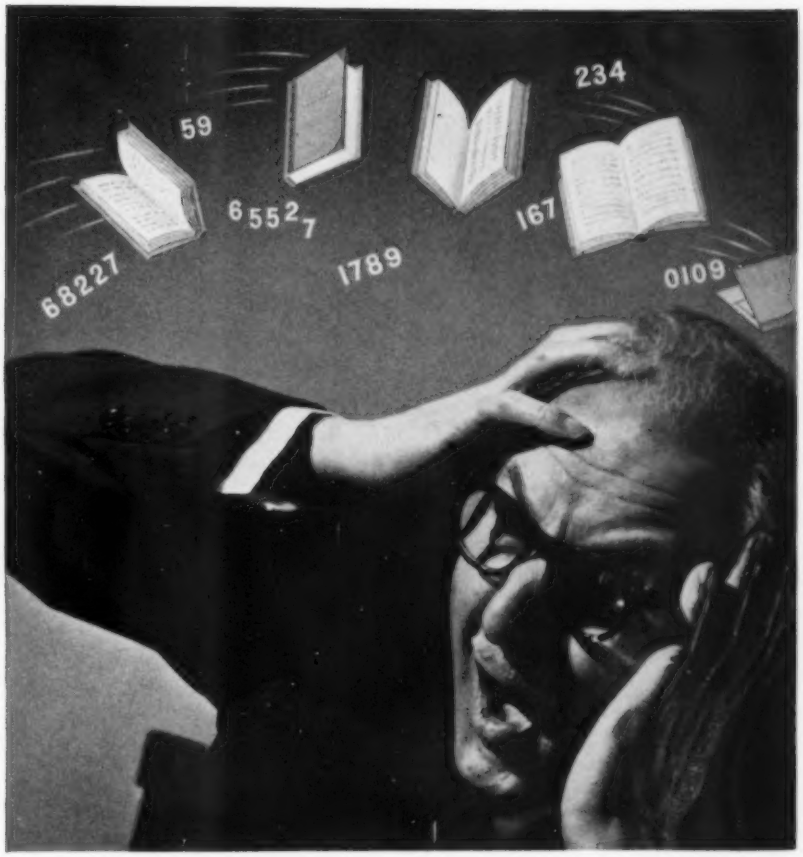


SHARE PRICES

Share prices have recently been falling again. At the time of going to press, the *Financial Times* index of industrial ordinary shares is about 158.4—about 5.6 points lower than the average for January, 26.5 lower than a year earlier, and 31.8 lower than three years earlier.



Figures can prove anything



FIGURES can prove anything, as any harassed Company Secretary who has tried to compare half-a-dozen quotations from different insurance companies for the same pension scheme will tell you.

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HOME MARKET SURVEY

A Round Britain Survey: Regional Notes on Markets and Industrial Developments

NORTH-WEST

THE overall picture in the region is one of **steady industrial expansion,** with important developments taking place in chemicals, nuclear energy and petroleum, many branches of engineering, vehicle production, and the food industries.

Many engineering firms gained important overseas contracts in 1957 which are likely to keep them fully occupied this year. Productive capacity is still not fully employed, however, and most firms could still do with more overseas business. Consequently some short-time working and labour redundancy have been reported.

Redundancy has arisen in some of the largest textile firms through increased automation carried out as part of a large modernization and extension programme. Thanks to the same programme of improvements, however, a large proportion of the firms in the industry are in a better position to meet growing difficulties in the export market, whilst others are engaging in diversification.

John Summers and Sons, of Shotton near Chester, expect their **new plant** to come into operation after mid-1959. Steel production should then increase to between 1,600,000 and 1,700,000 ingots a year. Output will have to come near 2 million ingots a year to meet the terms of Summers' recent agreement to supply Stewarts and Lloyds with hot-rolled strip for the manufacture of tubes at a plant to be erected at Shotton.

The Shotton plant of Stewarts and Lloyds is in turn to cost several million pounds and begin operation in 1960, producing about 90,000 tons of electrical resistance weld tube annually—some 10 per cent of the firm's overall tube production. The 6⅝in. to 16in. O/D tubes from Shotton are intended mainly to transport crude oil, petroleum products and natural gas in countries throughout the world.

Ferranti have received a £1,400,000 order for electrical transformers for the Niagara power scheme in New York State.

Following Fairey Aviation's recent **diversification** into nuclear power, it is believed that another leading aircraft firm is seriously considering going into power plant, electronics and structural work. Other engineering concerns in the north-west have recently ventured outside their normal fields, textile machinery makers among them.

British Columbia Electric Co. have awarded to Metropolitan-Vickers, of Trafford Park, an order for six turbo-alternators with a total capacity of 1,200,000 h.p. The contract is valued at about $25 million. The same body has placed a $3.5 million contract, for 39 miles of power cable, with B.I.C.C.

The Montreal Engineering Co. has placed a £2 million order with Metropolitan-Vickers for two 150 MW turbine-generator sets. Another order is for two 60 MW turbine-generator sets, costing £1,200,000, for the Umgeni (Natal) power station extensions, and a third for three turbo-generator sets, valued at £655,000, for a thermal power scheme at Basra.

Metropolitan-Vickers are to make four 2,500 h.p. electric winders for the North-Western Division of the National Coal Board at a cost of £500,000. Two winders are for installation at Agecroft Colliery, Salford, and the other two for the mine at Parkside, near St. Helens, the first to be sunk in Lancashire for over 30 years.

Simon Handling Engineers have secured an order worth more than $1 million for eight large pneumatic suction plants for the discharge of bulk grain from ships' holds into storage in export granaries. Six of the plants are for Montreal harbour and two for Quebec.

English Electric are building up output at a large



The vertical line at 100 represents the national average level of retail trade for the latest month (December). Against this average the performance of each region may be measured

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new heavy plant factory near Liverpool to cope with recent dollar orders. These include an $8.6 million sub-contract for water-turbine generators and transformers for a Columbia River project and a $1.4 million U.S. contract for two water turbines for Table Rock.

The Leyland Motors group recently announced that Transkat—a leading transport organization in the Belgian Congo—has placed further orders with them for Comet diesel trucks. These are to be used on a haulage service network in the South-East Congo. The trucks are eight in number, have a long wheelbase, 2-speed rear axles and 100 h.p. diesel engines.

T. V. Sundram Iyengar and Sons Pty., of Madurai, have just ordered 30 Indian-built Leyland Comet passenger chassis for their fleet which will carry bodies made in the company's own workshops at Madurai. The company has also ordered an additional six Leyland Royal Tiger Worldmaster chassis for its long-distance express coach services.

A further 15 Leyland M.C.W. Olympic underfloor-engined, 35ft. long, 44-seater single-decker buses are to augment the sizeable fleet of modern diesel buses which Jamaica Omnibus Services Ltd. has built up.

Chance-Pilkington have opened a £750,000 **optical glassworks** at St. Asaph (Flintshire). It will provide all the spectacle glass needed in Great Britain and most of the optical glass for the scientific instrument, photographic and cinematographic industries. Over and above this there will be sufficient for about 20 per cent to be exported in the early stages, and expansion is expected to accelerate on establishment of the European free market. Dr. L. H. A. Pilkington, chairman, believes the firm has less to fear and more to hope for in this respect than the Germans have.

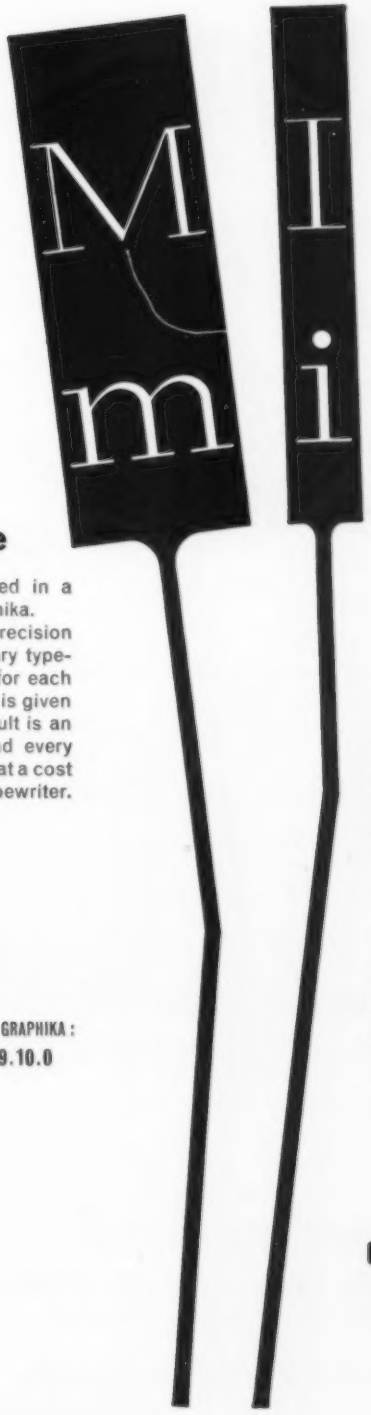
The Barrow yard of Vickers-Armstrong is building a new 40,000-ton Orient liner—the *Oriana*—which will be one of the two biggest vessels to be built in Britain since the *Queen Elizabeth*. She will cost £12.5 million.

Over on the Cheshire side of the Mersey Cammell Laird are collaborating with another famous British company in making plans for the construction of a 65,000-ton **nuclear-powered oil tanker.**

The former H.M.S. *Oakley*, one of the seven Royal Navy frigates recently sold to the West German navy, is to be refitted at Germany's expense by Harland and Wolff at Liverpool. West Germany is also sending three destroyers, recently bought from Britain, to Merseyside for extensive refits. Together, these orders will offset the present fall in employment on such work.

Subject to parliamentary authority, Shell Chemical, Shell-Mex and B.P. proposed to spend £25 million on a six-channel underground pipeline from the Stanlow oil refinery on the Manchester Ship Canal to the petrochemical works at Partington near Manchester—a d

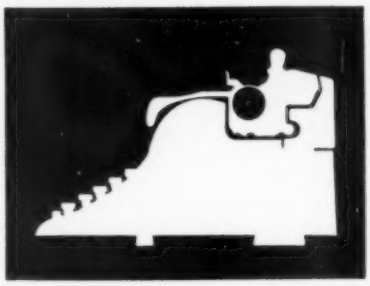




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tance of about 25 miles—by the end of 1958. About 500 acres are available for development at Partington, where 12 new plants are being built. Plant for the direct conversion of ethylene to ethylene oxide is scheduled for completion this April. The £3 million invested in this project should raise capacity to 45,000 tons annually—about one-third of European supplies. 1958 should also see increases in capacity for Ziegler polythene, putting it on a full commercial basis.

A contract worth about £1 million has been awarded Matthew Hall and Co. for the design, procurement, construction and commissioning of a **new chemicals building** at Joseph Crosfield and Sons' Warrington factory. The new plant—due for completion in July, 1959—will manufacture industrial detergents, silica gels and other chemicals, but represents only the first stage of Crosfield's eight-year, £5 million programme to rebuild their works. They are a subsidiary of Unilever.

The International Gifts and Fancy Goods Fair at Blackpool, which closed on February 7, brought in orders worth well over £6 million. The 35,000 buyers who came included about 5,000 from overseas, total attendance being higher than last year. Trade commissioners from several European countries inquired about the possibility of showing merchandise from their countries in 1959 on a prestige basis.

Mersey Docks and Harbour Board have just approved a £1 million scheme to provide a new two-storey shed and cranes at Huskisson Dock, Liverpool. The new shed will deal with increasing cargoes of imports. In company with Shell, the Board is to construct two **deep-water oil berths**, each capable of taking tankers of up to 65,000 tons deadweight. Total cost, including tanks, pumping equipment, and pipeline to the Shell Stanlow Refinery, will be several million pounds.

Modernization work being carried out by the B.T.C. at Garston Docks is to cost another £500,000, bringing the total to about £1,250,000. Electric level-luffing cranes of greater lifting capacity are to replace the North and Old Docks hydraulic quay cranes, in addition to the other modifications.

Cammell Laird are engaged on a £17 million extension programme which includes the building of two **new dry docks.**

B.I.C.C. have been commissioned by the British Transport Commission to supply and install overhead conductor equipment for 140 track miles between Liverpool and Crewe as part of the new high voltage **railway electrification** system. This scheme is the second stage in electrification of the main line between London (Euston), Crewe, Manchester and Liverpool. The first stage—between Manchester and Crewe—should be completed by mid-1959, but a test section is scheduled for operation in about four months.

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EXPORT MARKET SURVEY

A Round-the-World Survey: Country by Country

NEW ZEALAND

NEW Zealand has a total area, excluding the Island Territories, of 103,736 square miles. Its population (the greater part of which is centred round Auckland in the North Island) numbers about 2.2 million, and is expected to reach 3 million by the 1970s.

Since the war her **economy has developed rapidly**, total value of imports rising from about £109 million in 1949 to £250 million in 1955, in which year the value of trade per head of the population was £255, as opposed to £139 for the United Kingdom. The value of industrial output rose from £259.2 million in 1947-8 to £584.0 million in 1955-6—an increase of more than 125 per cent.

The figure for total investment for 1955-6 was £257 million—26 per cent of the gross national product. Of this sum £165 million was private investment, £67 million central government investment, and the remaining £25 million contributed by local authorities. In the three years up to and including 1955-6 **overseas parent companies** invested over £25 million in New Zealand subsidiaries.

The country's **trade balance** has been rather delicate of late, however, and last November found the recently-elected New Zealand Government facing a situation where the country's overseas reserves stood at £49 million, as opposed to nearly £76 million two years earlier.

★

Latest official comment—from the Finance Minister—is that controls may remain for a considerable time, with New Zealand forced to borrow from abroad. Some idea of how long this is likely to be may be gleaned from the fact that reserves at the time of going to press are sufficient to cover less than six weeks' normal imports, whereas the 1955 Royal Commission on Monetary Affairs suggested a six-month margin.

Generally speaking, the new schedule makes few or no cuts in imports of necessary raw materials, essential clothing, foodstuffs and plant, makes cuts of varying degrees in less essential items, and proposes not to 'waste funds' on imports of soap, footwear, leather goods and woollen piece goods. Where cuts are made the Government hopes to fill the gaps by using spare capacity in home industry.

The effect of this legislation on specific items is as follows: iron, steel and metals generally, crude petroleum and motor spirits, raw rubber, ball-bearings, wheat, tea, coffee and dried fruits are likely to suffer very little. Using the 1956 figures as the basis for measurement, electric motors are cut by 25 per cent, electric irons and razors 75 per cent, watches 50 per cent, cameras 75 per cent, dairying machinery 25 per cent, other agricultural machinery 10 per cent, chinaware 50 per cent and toys 75 per cent.

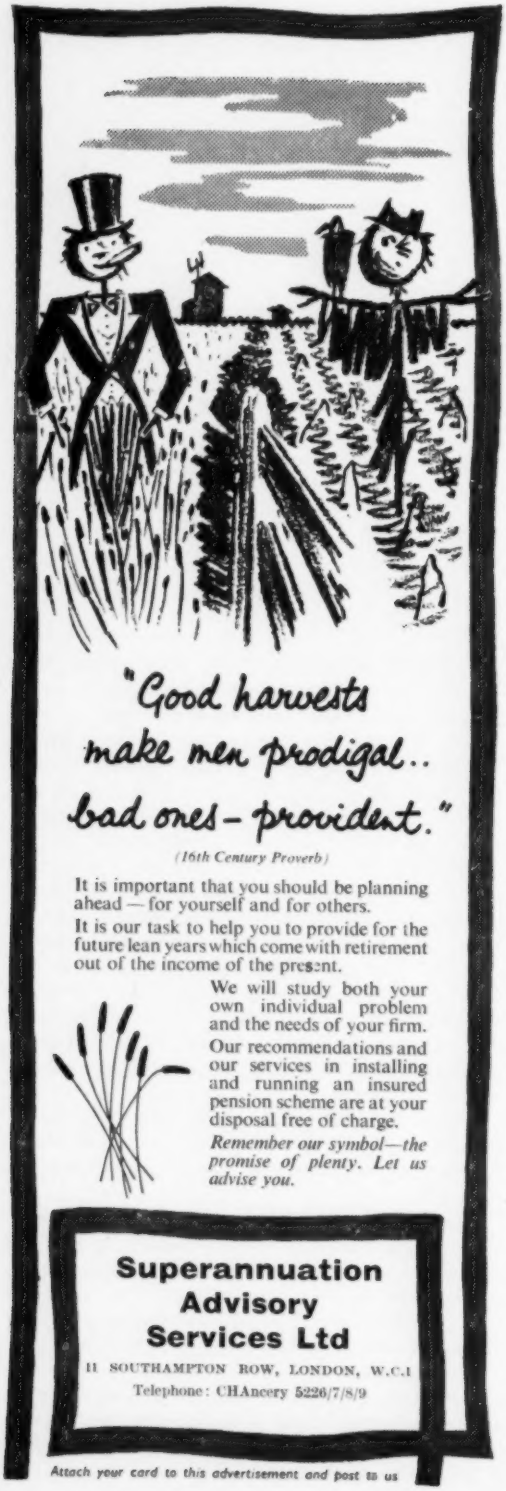
★

Prospective exporters and investors should not, however, allow themselves to become too easily discouraged. In order to balance her trade New Zealand must greatly expand her **secondary industries**, and this is where British firms can play an important part in supplying the necessary **capital and technical knowledge.** Experience has already shown that it pays to set up subsidiaries, which can prosper in New Zealand despite relatively high labour costs, etc., because they produce goods inside the tariff barrier. Typical examples of such concerns are motor assembly, tyre and tube manufacture, fertilizers, chemicals, meat-freezing, disinfectants, tobacco, textiles, radios, refrigerators, vacuum cleaners, wires and cables, lighting, soap, paint and cement. It is a reasonable guess that opportunities will appear for setting up subsidiaries for the manufacture in New Zealand of electric motors, electric household appliances and other light engineering products, in addition to textiles.

Secondary industry will also be boosted by the expansion of farming and other basic industries caused by increased mechanization and improved scientific techniques.

One such industry is **iron ore** extraction, which in 1955 totalled 2,550 tons. Four syndicates, at least one of them backed by foreign capital, are now contemplating the exploitation, at a cost of £35 million, of the rich iron sand deposits on New Zealand beaches, following favourable reports on their commercial possibilities.

Although surveying is incomplete, there is little doubt that the total quantity of New Zealand's iron-bearing sands is enormous. State estimates put the titaniferous sands near Patea at 45.5 million tons of 21 per cent soluble iron, which would yield 14.5 million tons of



concentrates assaying 53 per cent soluble iron after magnetic separation. Further large deposits are centred around Taranaki.

The final main source of iron is the ore deposit of the Onekaka region, Golden Bay, in the Nelson Provincial District, which contains about 9.5 million tons of 40 per cent ore.

Coal resources in New Zealand are literally something of an unknown quantity at present. Deposits are estimated at between 162.5 and 669.0 million tons, so there is obviously a lot of fieldwork to be done yet.

A potent factor in the country's growth since the war has been the development of her **hydro-electric power** resources, which more than trebled between 1939 and 1954, when consumption was 4,366,000 kWh. It then rose to 4,530,500 kWh. in the year ending March, 1956, and has since risen at an annual rate of 10 per cent per annum.

Meantime voltage and power cuts have become as frequent as in the U.K. immediately post-war (most of the consumption takes place in North Island, where two-thirds of the population live). And this shortage exists despite the current construction of 607 MW new capacity to bring total generating capacity to 1,746 MW. A special committee recently estimated that an additional 983 MW of capacity would be required by 1970 (costing £235 million) and that national requirements would be for 3,400 MW by 1975.

On their recommendation the State Hydro-electric department is now pursuing **extensive schemes** in both islands. Development work in the North Island is centred on the Waikato River between Lake Taupo and Cambridge. Three stations are in course of construction there—Atiamuri (scheduled for completion in 1929), Waipapa, and Okakuri (both to start operating in 1961).

In the South Island further use of the Waitaki River at Black Jack's Point is envisaged where a £36.4 million, 480 MW power station is to be built at Benmore. The Roxburgh station on the Clutha River is to be expanded from 160,000 kW. to 320,000 kW. Investigation and access roading work have been carried out at Rotaroa for the 60,000 kW. Braeburn scheme, temporarily shelved in favour of a 220 kV. transmission line from Islington to augment supply to the Nelson Marlborough area.

The **increasing power demands** of North Island agriculture mean that current from the new stations on the South Island will have to cross about 25 miles of sea to satisfy them. This entails the laying of a submarine cable and construction of associated sub-stations at a cost of £16 million.

To supplement the country's hydro-electric resources the Wairaki **geothermal steam** station is to be further developed to 82 MW.

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MARCH OF BUSINESS

U.S. firms misuse electronic computers

MORE than 1,000 electronic computers are actually operating in the U.S.A. But very few of them are being used in a way that even begins to exploit their full potentialities.

John Diebold, 31-year-old American authority on automation, said this in London recently. He was opening a five-day, 75-guinea course on automatic data processing, run by his firm with the support of the British Institute of Management. Its theme: that European computer users can learn from U.S. mistakes.

The trouble, he explained, was that American firms were still pursuing the will-o'-the-wisp of labour savings as the principal justification for installing a computer. He added:

"All but a tiny fraction of their computers are doing what was done equally well—and in many cases for far less cost—by punched card machines. This is an almost unequalled example of sheer waste of a great business resource."

Like BUSINESS (November, 1957, issue, pages 86 to 95) Mr. Diebold thinks that payroll and other routine applications are getting more attention than they warrant. He too believes that the real value of computers lies in such fields as management accounting, cost control, forward planning and operational research.

The 'labour-saving fixation' is liable to have serious consequences by raising unfounded fears among employees. Says Mr. Diebold: "If you don't make major cuts in personnel, for goodness sake don't talk beforehand as if you were going to."

Although Britain and other European countries have fewer computers in use than in the U.S.A., Mr. Diebold believes that they hold a qualitative lead in the important area of management control. Reasons are: (1) they are accustomed to squeezing more from their equipment; (2) they have a more scientific approach to management; and (3) standards of basic education and training are generally higher.

At least one British organization is already putting Diebold principles into practice. This is United Steel, which is now installing a Ferranti Pegasus computer in its department of cybernetics and operational research.

B.I.M. cuts: why they are needed

THE British Institute of Management has survived a few crises (mostly financial) since its inception in 1947. But none has attracted as much attention outside Management House as the current belt-tightening operation.

At the end of January, *The Times* ran two stories on the B.I.M.'s 20 per cent staff cut (affecting all levels from top to bottom) and its need to reduce annual expenditure by about £25,000.

In reply, the chairman of the council had to produce the double-edged assurance that, despite these economies, there would be no reduction in in the B.I.M.'s services.

The financial difficulties are directly caused by the drying up of Government grants and other aid. Originally, the Chancellor of the Exchequer agreed to set the new institute on its feet by making a grant of up to £150,000, to be spread over five years. In fact, the B.I.M. has had much more.

Between 1947 and 1957, the financial aid from all sources amounted to about £520,000. In the same period the total revenue from subscriptions matched this almost exactly.

Peak year was 1954-5, when the institute got £71,561 in grants: £44,980 from the Government, and £26,581 from Conditional Aid Funds and the European Productivity Agency. For 1957-8, the total is only £15,000, all from non-Government sources. This is little more than 15 per cent of the annual salary bill (before the cuts).

Over the years, the subscription revenue has increased steadily from £8,895 to £96,754. In 1958 it is

Next Month

The Changing Practice of Management

A BUSINESS Panel discusses the practical value of old and new management principles

Setting Up a Sales Force

Case-history tells how and why an established manufacturer switched to direct selling

INDEX to 1957 Contents

A complete index to the editorial contents of BUSINESS in 1957 appears on pages 141 to 144 of this issue.

This is the first time that an index has been published. In future it will appear annually.

For easy reference, the index is divided into two parts: Editorial features and notes, and reviews of new equipment. Each of these is sub-divided into subject-groups.

expected to top the £100,000 mark. But this is not enough to keep the B.I.M. out of the red.

The institute attributes some of its problems to an unrealistic scale of subscriptions. The only change in ten years has been the raising of the minimum subscription (for firms with up to 100 employees) from 5 gns. to 10 gns.

In future the B.I.M. will concentrate on activities which show a reasonable cash return. Long-term research will be curtailed, but more will be done to disseminate existing information—especially through conferences and short courses. The publications set-up will be streamlined.

It would be unfortunate if the B.I.M. were to flounder at this stage of its development. Its future rests with British managers. They alone can decide whether or not to give it new life: not only by supporting it financially, but also by criticizing its activities and demanding the sort of services they really need.

Apathy is the B.I.M.'s main enemy.

More firms use E.C.G.D. insurance cover

LAST year the volume of business covered by E.C.G.D. 'commercial' insurance rose by nearly 20 per cent. Goods shipped under E.C.G.D. cover reached the record figure of £485.4 million, compared with £409.4 million in 1956. Another record was set in the insurance of new medium-term transactions—£156.6 million, against £77.5 million in 1956 and £43.3 million in 1955.

There was a slight drop in the face-value of current short-term policies (from £546.6 million to £518.6 million) but the number rose from 4,112 to 4,326.

How to get the managers you need

A COMPANY should always have under training *four times* its estimated future requirements in managers. This is the advice of Lt.-Col. L. F. Urwick, whose name is more closely associated than any other with the whole subject of management education.

In a new publication* he gives these reasons for the four-to-one ratio:

—One-quarter of the men whom the company start to train will be dead or totally disabled before they are 60.

—Another quarter of them will fall by the way.

—It is desirable to have at least two possible candidates for every top position.

Lt.-Col. Urwick emphasizes that the training of men who miss promotion to top jobs is not a waste of time. Some, of course, will go elsewhere; but those who stay will be better managers in lower positions.

No business, he says, has ever gone bankrupt because it had too many good men.

*"16 Questions About the Selection and Training of Managers." Urwick, Orr and Partners Ltd. 36 p.p. 2s. 6d. post free.

University 'sandwich' course for businessmen

SHEFFIELD University is to repeat the 'sandwich' course in business studies which was staged, as an experiment, about four years ago. It will cater for up-and-coming executives who have already gained considerable experience in commerce and industry.

As before, there will be a two-week residential session during each of six consecutive vacations. The course starts in July and is due to end in April 1960.

The syllabus, drawn up by the department of economics, includes business and the law; business and the community; social and industrial psychology; accounting and statistics; economics; and history.

The university decided to describe the original experiment as a course in business studies because it was doubtful about its own ability (or anyone else's) to teach management.

U.S. productivity plan gets results in U.K.

TWENTY-FOUR British firms are now using the 'share of production' plan devised by American accountant Allen W. Rucker. In every case there have been marked improvements in productivity, profits, wages and management-labour relations.

F. R. Bentley, the consultant who holds the British copyright, made this claim when he addressed a recent meeting of the Institute of Directors' Midlands branch.

He explained that the cost of installing the plan was spread over 12 months. In a company with 100 employees the total fee would be repaid in that time by the management's share of less than a 2½ per cent in-

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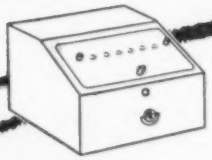
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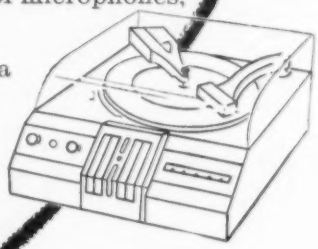
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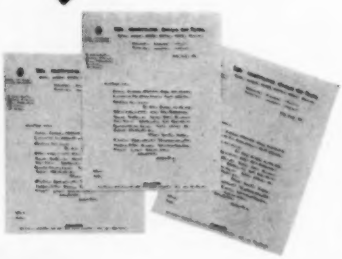
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EM 163

crease in productivity. In a firm with over 1,000 employees, a 1 per cent increase would more than cover the installation cost.

A case-history of the plan in action at a Gloucester factory appeared in the September, 1956, issue of BUSINESS (page 88).

Retail group to hold art show

LAST month's article on industrial patronage of the arts quoted the example of the John Lewis Partnership. Their latest venture is an exhibition called "Painting Now," to be held from March 27 to April 12 at their Southampton branch.

The aim is to give rising artists a chance to show and sell their work. All expenses will be borne by the company, who will charge neither fees nor commission on sales.

There will be about 120 exhibits. They will come only from artists who have been invited to submit paintings.

The Partnership expect to buy some themselves. These will be added to the collection of original paintings which they are building up for exhibition to employees and in towns where there are John Lewis branches.

Europe's living standards still lag

EUROPE'S standard of living is still less than half the United States'—even when a basis of comparison more realistic than official exchange rates is used. This is shown by a new O.E.E.C. study* of national production and price levels.

The study gives figures for 1955. Here are two of the points which emerge:

—*Total* national product of all O.E.E.C. countries was about 56 per cent of the United States' figure at official exchange rates; 64 per cent at European prices; and 83 per cent at American prices.

—But the U.S. has 165 million in-

*"Comparative National Products and Price Levels: A Study of Western Europe and the United States." O.E.E.C. 24s.

PEOPLE

PRODUCTS

PLACES 1



PRODUCTION EXPERT **Louisa G. Gibb last month became general factory manager of the Birds Eye quick-freezing plant at Kirkby, Lancs. She is a science graduate from Liverpool University with 30 years' experience in industry—most of it in production and works management.**



BACK TO FRONT **operation has now been completed at the Birmingham factory of Cincinnati Milling Machines Ltd. What used to be the back of the works, facing the canal, has become a handsome 942ft. facade. The canal has received landscape treatment and a parking lot has been provided.**



PUBLICITY ASHTRAYS **are still popular giveaways. But their design has improved considerably over the years, as these examples by W. E. Chance and Co. Ltd., Smethwick, show.**

habitants, against the O.E.E.C. countries' 284 million. Therefore the corresponding percentages for gross national product *per capita* were: 32.8, 37 and 48.

Britain's percentage, on the most favourable basis, was 64. At the other extreme was Italy with 35.

Comparison with the 1950 figures shows that Europe's standard of living is catching up—but very, very slowly.

How to put over the profits story

IF you talk about giving financial information to employees, many businessmen immediately think of those hoary symbols of enlightenment, the pile of coins and the sliced cake. Their use was attacked recently by W. P. N. Edwards, C.B.E., director of the Federation of British Industries' Home Services: not only because they were stale but also because they represented a wrong approach to the subject.

Usually they were designed, he said, to show the smallness of profits or dividends in relation to total turnover or total expenditure on such things as wages and materials. Was this the point that industry really wanted to put to its workers?

Mr. Edwards asked: "Ought we not to try to get across almost the reverse—that only if the profit is large enough and the dividend adequate can we hope to (a) keep the undertaking going and therefore maintain continuity of employment, and (b) go on expanding the undertaking and therefore, in the long run, increase the volume of employment.

"Have we not allowed ourselves to become obsessed with the notion of distributing the cake, instead of increasing the size of the cake so that everyone gets a larger slice?"

Mr. Edwards, who was speaking at a meeting of the Incorporated Advertising Managers' Association, offered this suggestion: Where possible, companies should get out figures to prove that increases in profits are accompanied by increases in employment.

PEOPLE

PRODUCTS

PLACES 2



STRANGE CAREER lies behind the appointment of 33-year-old G. R. Bampton as home sales manager of Fonadek (Branson) Ltd., Birmingham. Church organist at 13, he became an engineer, studied at Manchester University and at the Royal College of Music there, was a cinema organist during the war, and finally went 'on the road' as a salesman. At Fonadek his promotion has been swift.



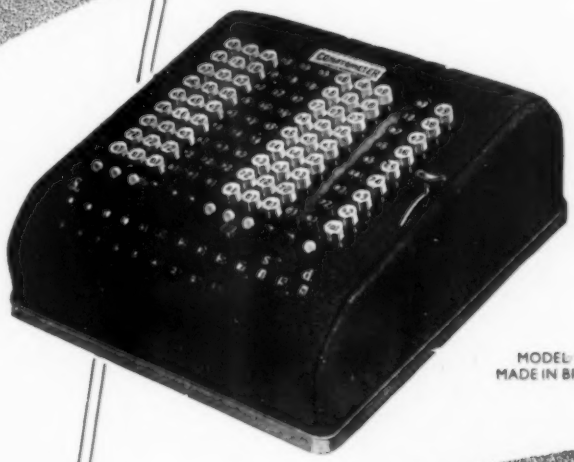
OFFICE PRODUCTIVITY was the theme of a 600 sq. ft. exhibit by Leicester City Council's O and M department at a recent work study exhibition in Leicester. The stand included modern equipment which was demonstrated, and a wall display showed how the office of the future would probably work.



EASIER MOTORING is the aim of the Auto-Mate, produced by K. Bisset and Co., London, W.C.2. It is a novelty pigskin holder for notebook and pencil, glasses, cigarettes and matches. It clips neatly to the back of a car's sun visor.

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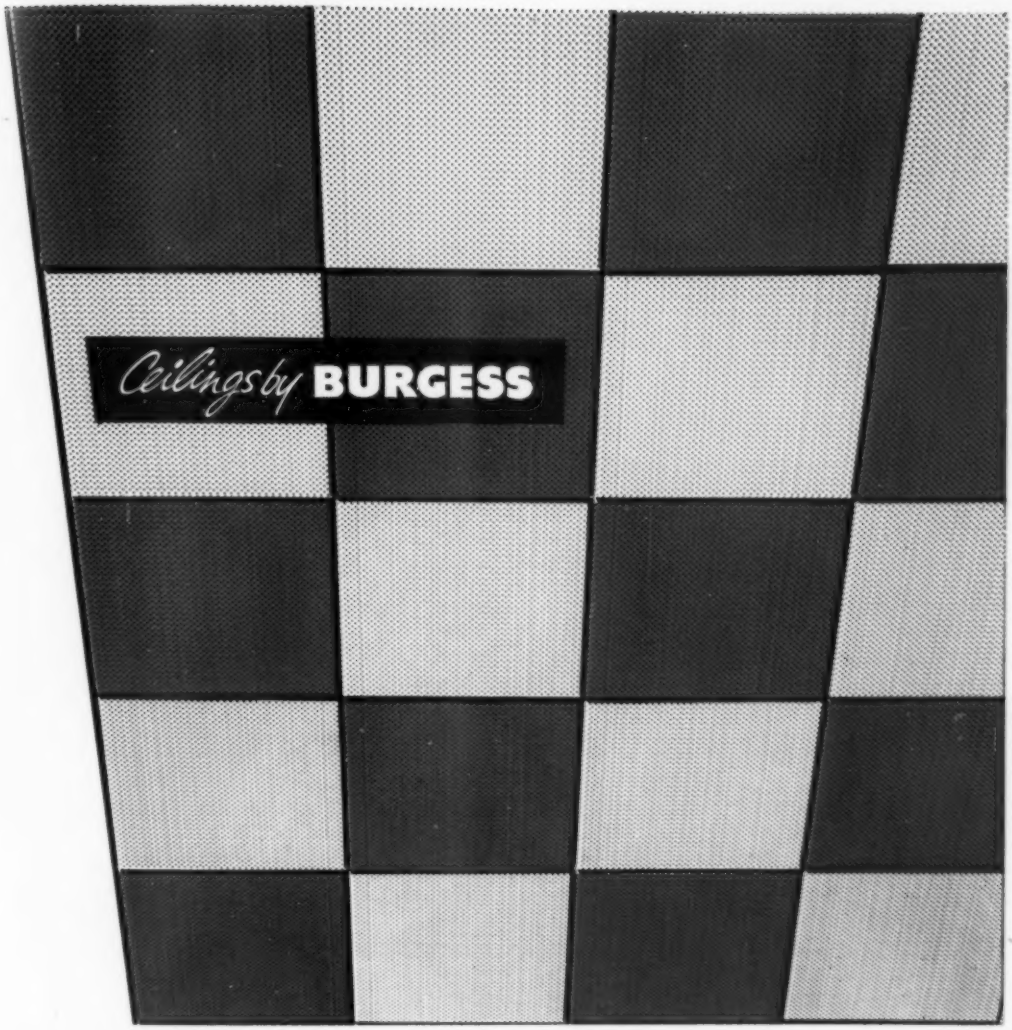
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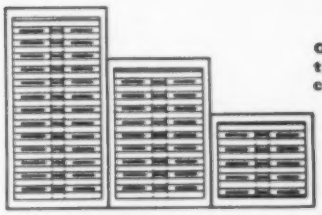
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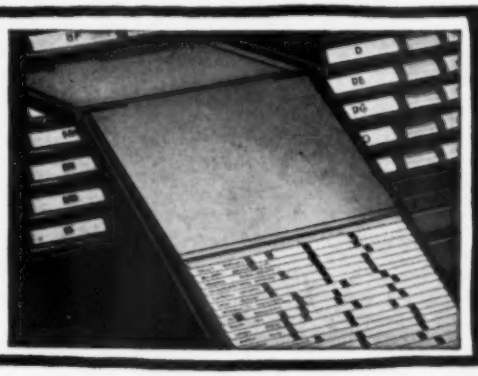
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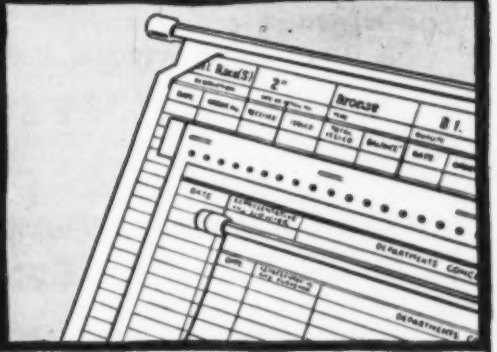


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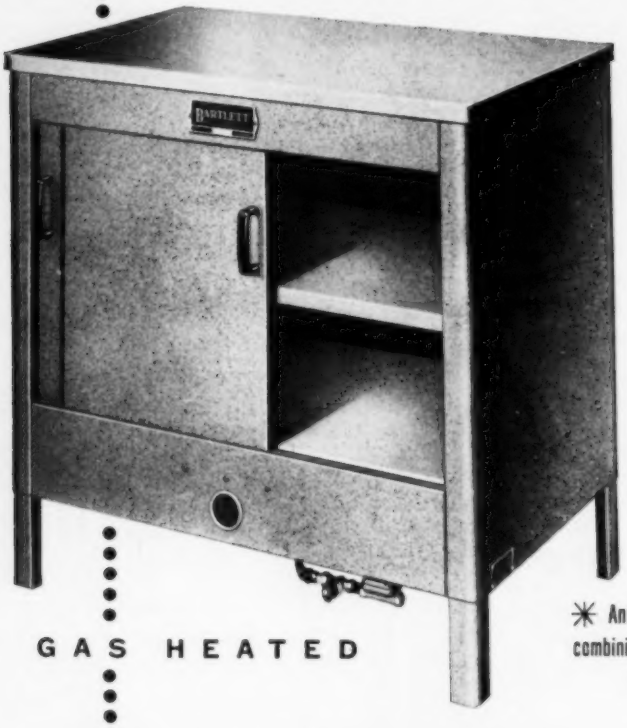
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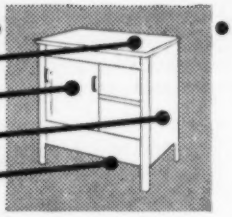
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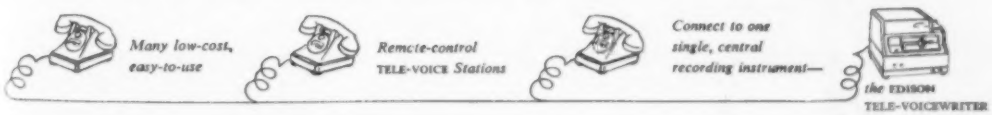
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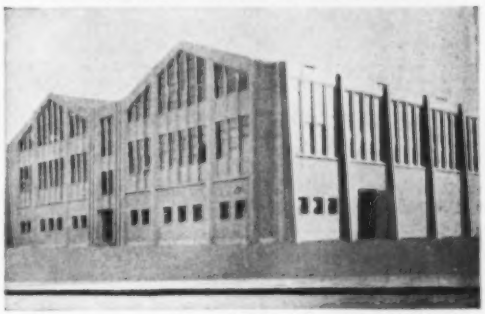
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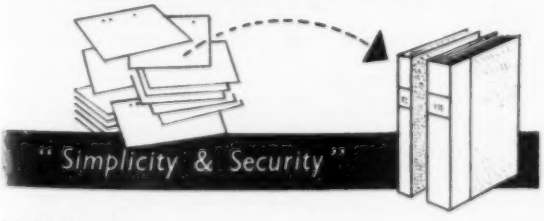


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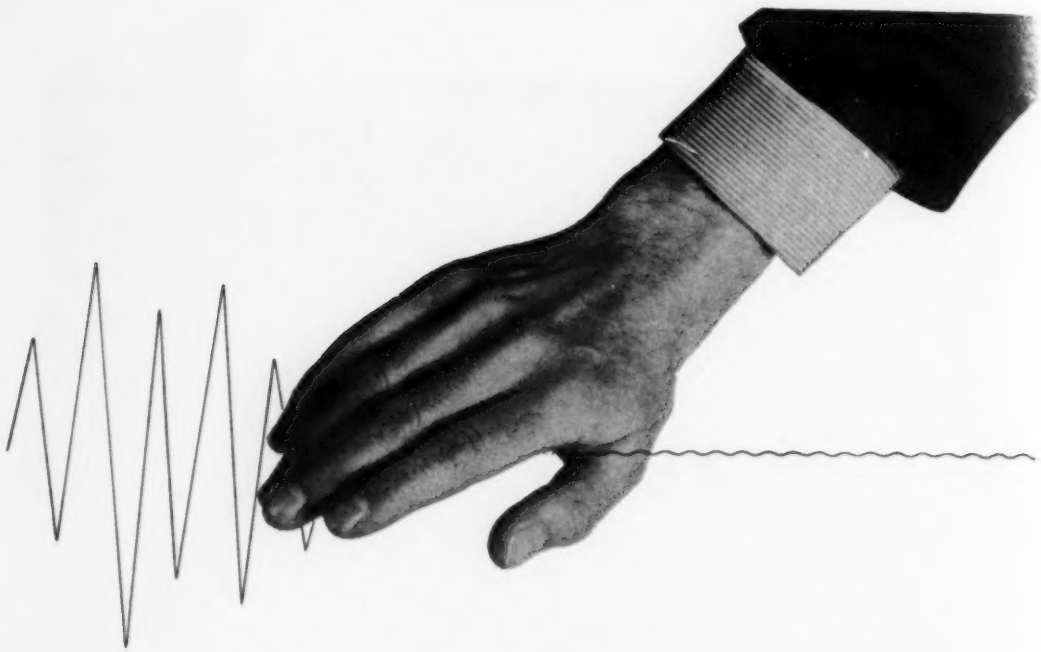
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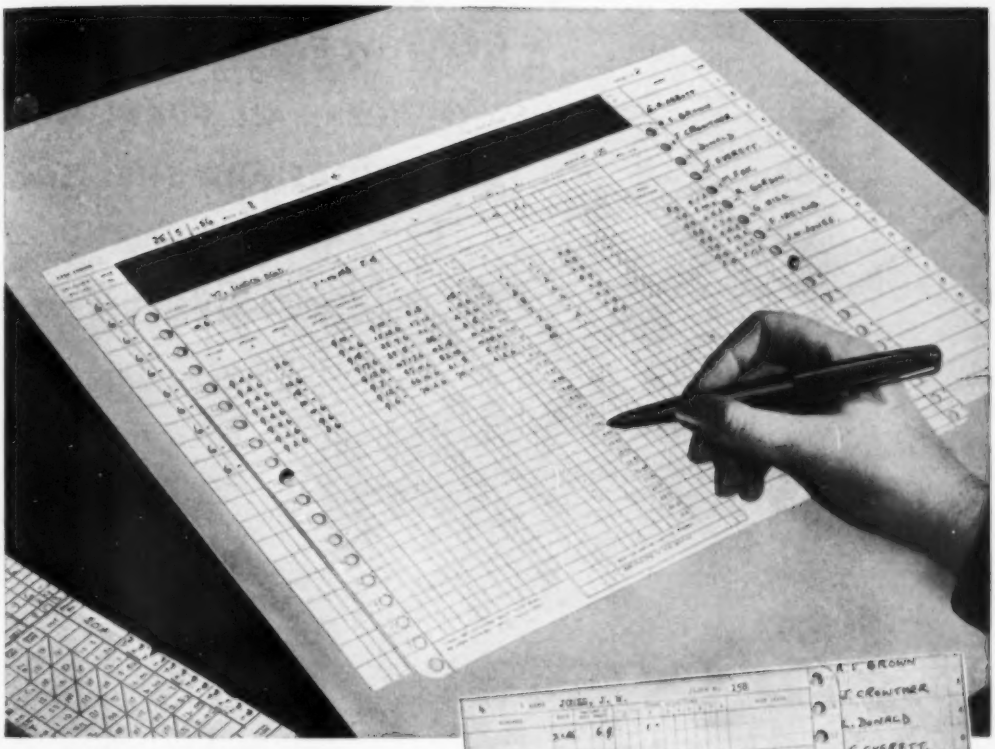
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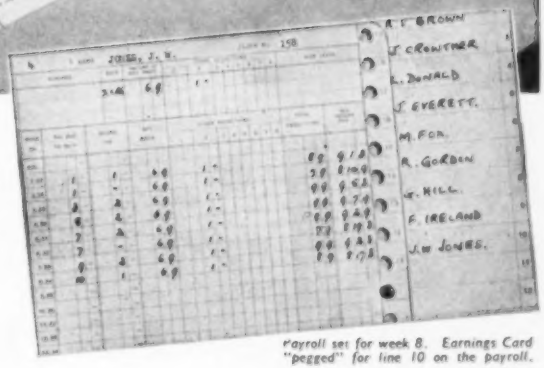
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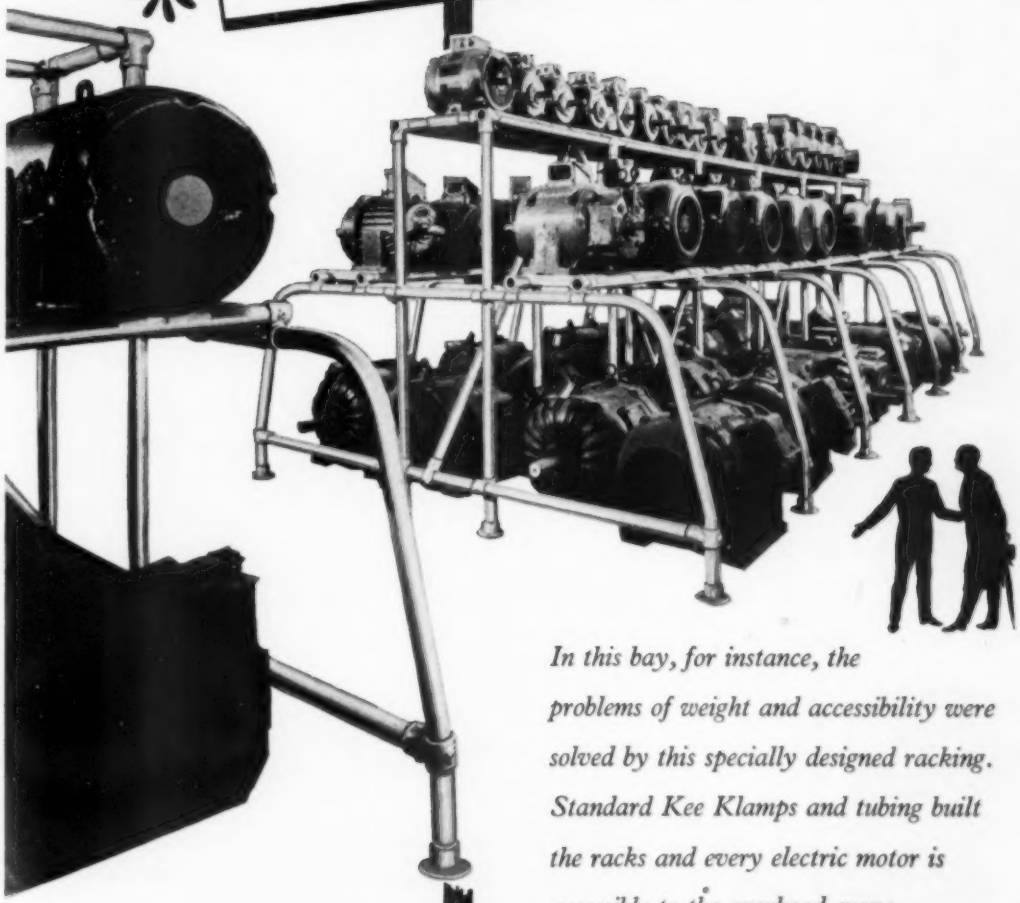
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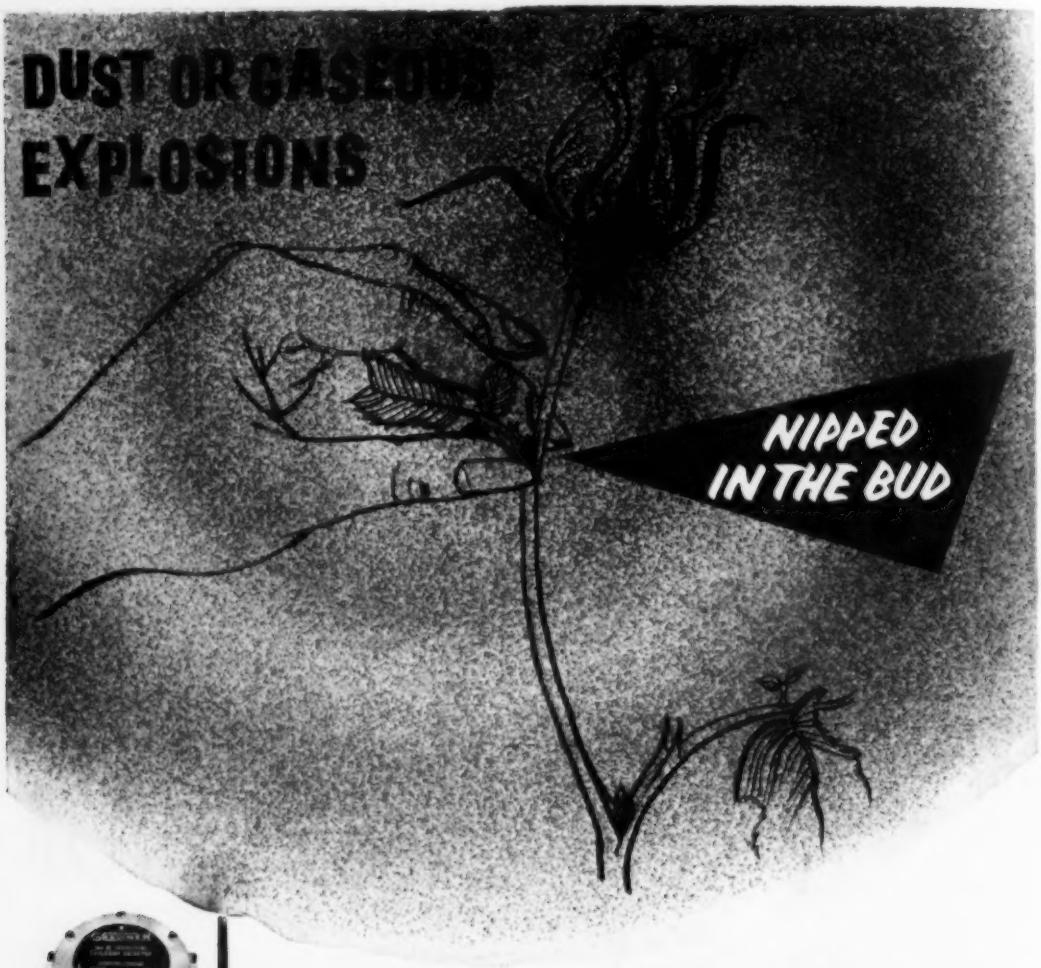
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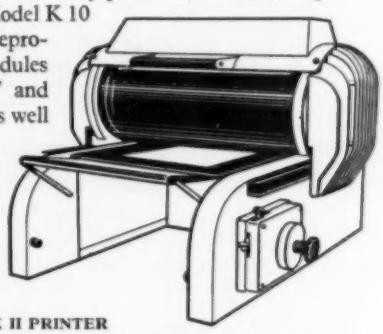
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If only she were twins . . .

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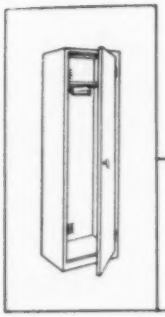
AZOFLEX MODEL K 10 MARK II PRINTER

Table-model photo-printing machine for documents up to 10″×13″. Maximum output about 180 copies per hour. Built-in timer for pre-setting and controlling exposures. Normally used with two AZOFLEX T18 developing machines, occupying bench space of 5′×2′6″.

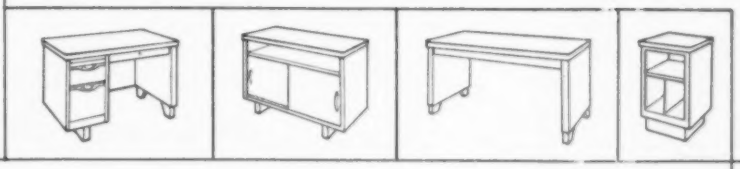
ILFORD *Azoflex*

Enquiries to: Ilford Limited, Azoflex Sales Department AZ9E, 104 High Holborn, London W.C.1. Telephone: HOLborn 3401.

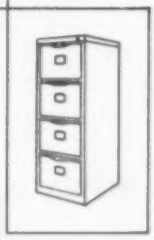
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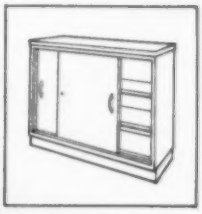
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NO LEVERS OR HANDLES TO MOVE

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this is the only operation necessary on the **International** *Superelectric* **Attendance Time Recorder**



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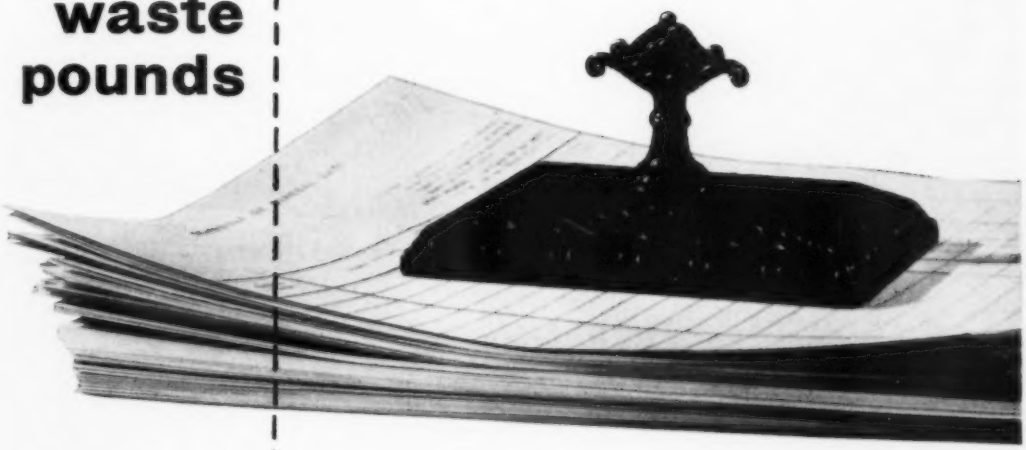
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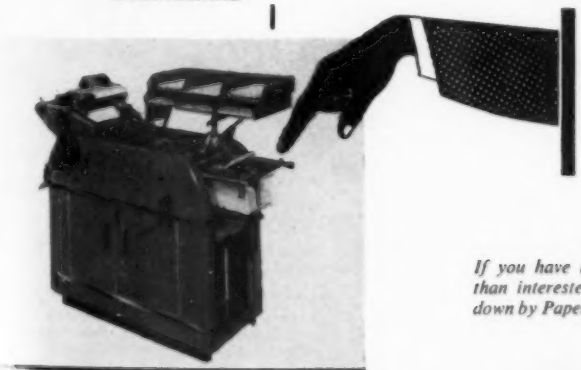
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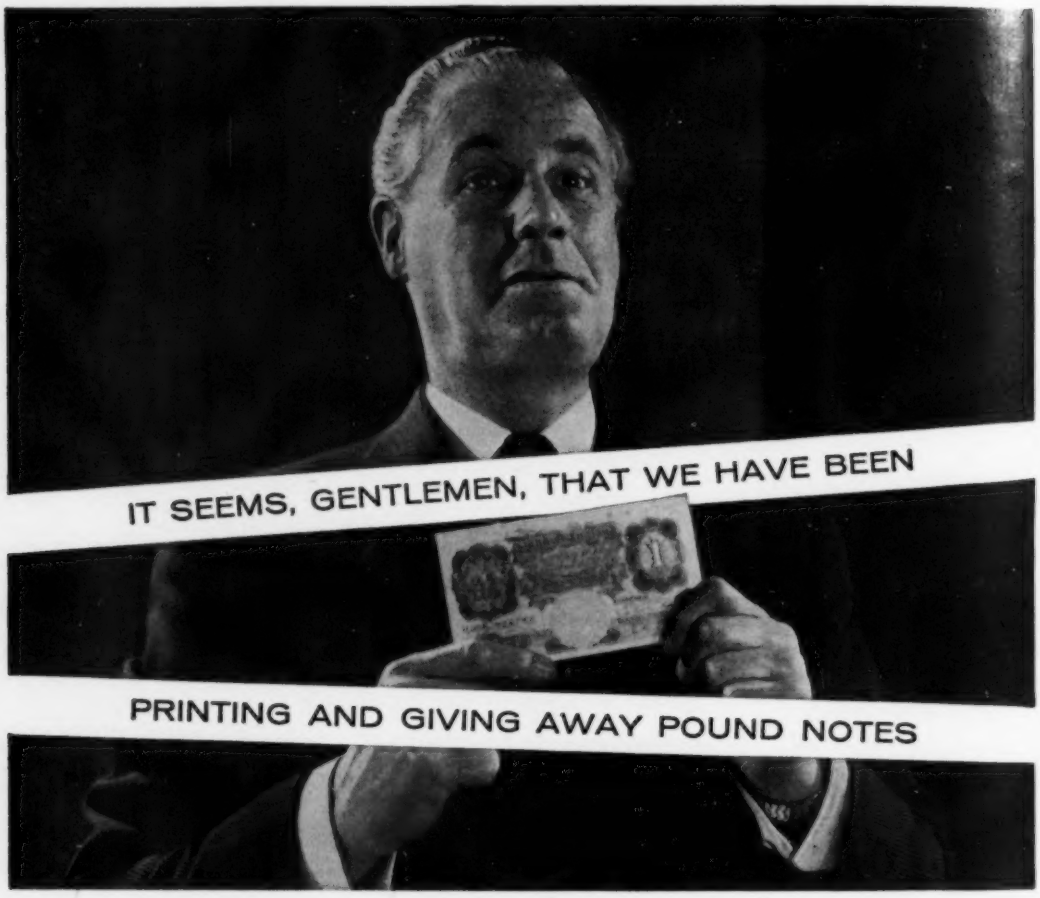
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GET A *Verifax* COPIER

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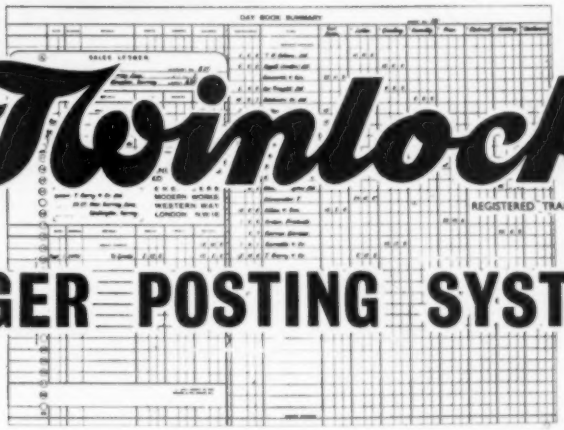
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Seeing is controlling in modern business. Visible record equipment reduces human error to a minimum, speeds up posting and reference and provides that critical control vital to good management.
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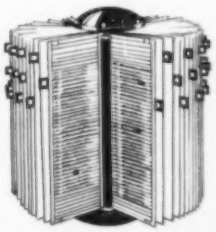
- *Machine and Hand Posted Records*
- *Sales, Purchase and Stores Ledgers*
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- *Purchasing*
- *Hire Purchasing*
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- *Sales Records*
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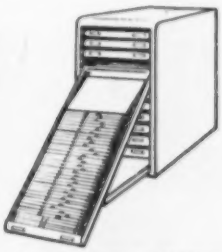
Vistem Mobile Unit



Single-pedestal Vistem Desk



Bizada Rotary Strip Index



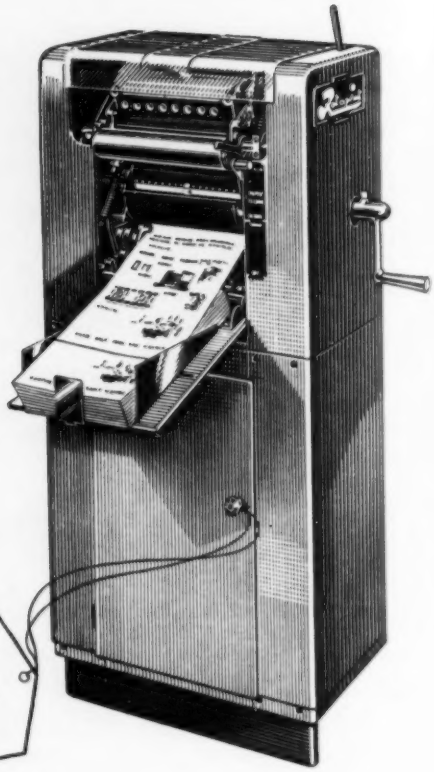
Admindex Single-row Cabinet

Carter-Parratt Limited

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3. A versatile machine—one which is able to produce your sales promotion leaflets as easily as it will do your stationery and duplicating work.

And he gets the backing of the Rotaprint after-sales service. Whatever your problem or need—paper, process work, machine maintenance, supplies—the Rotaprint organisation can provide the answer.

For all other aspects of Rotaprinting please return this coupon; it involves no obligation whatsoever.

Rotaprint

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ROTAPRINT LIMITED, ROTAPRINT HOUSE, HONEYPOT LANE, N.W.9
TELEPHONE: COLINDALE 8822 (12 LINES)

H30

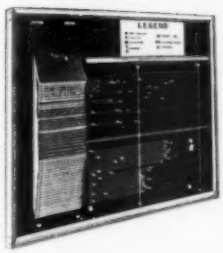
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Please send, without obligation, printed specimens and full details of Rotaprint.

NAME_____

DEPARTMENT_____

Pin this Enquiry Form to your letterheading and post to ROTAPRINT LTD · HONEYPOT LANE · LONDON NW9

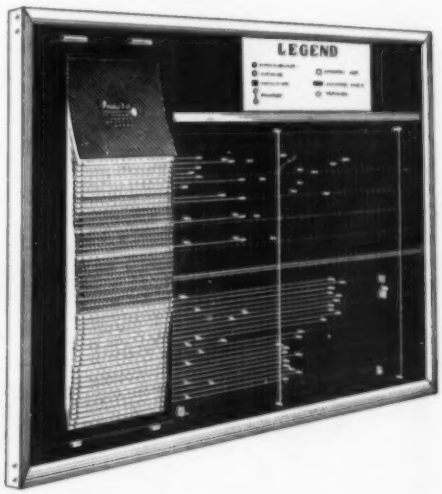


URGENT

URGENT

For your attention, please!

Every aspect of modern business must be PLANNED and day-to-day PERFORMANCE must be compared with the PLAN; yet you cannot find time to search files and records for hidden facts. You need a system which will tell you visually, instantly, which part of your plan is not being achieved, which item is behind schedule, which detail needs your attention. In short, if comparative results or dead-line dates concern you—so does PRODUC-TROL. Ask for a B&A specialist to explain its adaptation to your problems.



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The economy of running, quality of work and simplicity of the new Roneo '750' are ahead of any other duplicator in the world. There is no heavy installation cost and highly-paid, skilled operators are not needed. With the Electronic stencil, the printing of letterheads, forms, circulars, illustrated leaflets or minutes becomes a simple and very economical process. Ask for a demonstration of the new "Electro-spray", which enables hard-surface paper to be used without interleaving.



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MONOPOLIES—What's Wrong with Them?

Too many people confuse the issue by getting sentimental about 'free enterprise'

Sir,

In his letter on co-partnership (BUSINESS, February page 25) Mr. P. V. G. Vowles talks about "an atmosphere of fair competition—which means the abolition of monopolies." This is one example of a popular form of muddled thinking which I, for one, have some difficulty in 'unmuddling'.

Surely the purpose of all competitions is that eventually someone should *win*. In the industrial field, the winner is the company which grabs the lion's share of the available business by offering a more attractive product or service. If the product or service is noticeably more attractive, it is logical to suppose that, in time, the company may put its competitors right out of business.

Who can grumble at that—assuming that the company has stuck to the rules of the game and achieved success through better business acumen and a more intelligent deployment of resources? Should the good (i.e. successful) firm be handicapped in some way because it *is* good?

Of course I can see, only too clearly, the other side of the picture: with competition destroyed, the winning company may relax the standards which have enabled it to shoot ahead. But isn't it just as dangerous a "abolish monopolies" (which may have developed naturally and fairly) as it is to set up artificial monopolies in industries where there would normally be plenty of competition?

The trouble with most people is that they try to mix an appreciation of good business tactics with a sentimental regard for 'free enterprise'. In their opinion, government action doesn't destroy freedom so long as it acts in the way they think it should. They like success stories so long as the success stops at a certain point: rags to riches are O.K., but riches to greater riches are suspect.

But maybe this is an impertinent suggestion from a man who earns a living as an executive in a nationalized concern—which, incidentally, is why I have to sign myself

A.M.P.

London.

These form letters are superfluous

Sir,

Your January issue carried an excellent article by Mr. Dennett on the construction of 'form' letters by the use of standard elemental paragraphs. But Mr. Dennett is guilty of recommending unnecessary letters and perpetuating the use of 'commercialese.'

One or two of his examples could, I think, be improved. Take his suggested A.3: 'Thank you for your letter of ——— also cheque enclosed. This has been passed to our accounts dept., who will post their receipt direct.' Surely Mr. Dennett is aware of the Cheque Act and that receipts can be dispensed with. Why involve his firm in any more expense?

C.1. said: 'The ——— that you asked us to procure for you has (have) now arrived, and as arranged we are sending a note of the total cost. If you will kindly let us have a cheque (or postal order) for this amount, we will see that the goods are dispatched immediately.' This might be improved to: 'The ——— ordered by you is in our warehouse. The cost is £—— and when we receive your cheque the goods will be dispatched.' It could be further improved by not writing the letter at all but just send a *pro forma* invoice.

Regarding Z.2, how does one 'secure information?' Surely the use of the plain word 'get' is better.

The whole object of business letters is to be concise, polite and of a high standard of English: a letter should be written only when the correspondent has something to say and carries the transaction or discussion a stage further. Much time and money could be saved by the omission of needless letters, which in turn would reduce overhead costs and so reduce prices.

F. J. NEALE

Gainsborough, Lincs.

How Profitable is Your Business?

by Edward Rennie

IT sounds a simple question, but how many firms really know how profitable is their business? For that matter, do they know how efficient it is?

During the last decade there has been a tremendous growth of interest in cost accounting and management accounting, as distinct from the traditional financial accounting. Some measure of this quickening interest can be got from the fact that membership of the Institute of Cost and Works Accountants, the professional body mainly concerned with these newer forms of accounting, has trebled since the war. And the half-a-dozen accountancy firms that specialize in this work, as consultants, have boomed out of all recognition.

These firms generally ask their clients why they came along. And the reasons most frequently given are listed in the box on page 69. The six reasons given apply just as much to a firm that decides to appoint a staff accountant with the new qualifications, as they do to a firm which decides to call in consultants.

At least one of these six reasons is likely to be operating in the minds of most members of top management. Hence the quickening interest in the new accounting techniques. And for every top executive who can or will call in a consultant or appoint a new staff accountant, there are many others who want to take a briefer and cheaper look at the new methods and how they can make a business more profitable. This was clearly indicated by the recent experience of the British Productivity Council. They organized a one-day conference in London on Management Accounting. Due to difficulties in finalizing arrangements for speakers, notices of this conference were sent out only three days before it was held. Yet 300 executives managed to take the day off to attend.

What sort of things is it that these executives wanted to hear? How do the newer accounting techniques differ from the traditional financial accounting used by every business firm? To answer this, we need to turn back briefly to the aims and achievements of the traditional accounting.

What the Financial Accounts Do

In the current enthusiasm for management accounting, one should not detract from the value of financial accounting, which has about five important uses that every bookkeeper, however junior, implicitly recognizes in his (or her) work:

Value of the traditional accounts should not be under-rated. But management accounting can give better checks on performance

1. **Security.** One of the most valuable features of double entry bookkeeping, first invented in Italy in the Middle Ages, is the security it gives to a firm against robbery by its own staff. Every transaction has to be entered twice. A sale of goods for cash will have to be entered in one book as a movement of goods and in another book as a movement of cash. Later a 'trial balance' of the books is made, and unless there are 'compensating errors' on both sides of the accounts, the firm has a simple check that it did in fact receive money for goods dispatched. They were not stolen. Double entry is not fool-proof, but it does provide a check that would be worth making even if management accounting had never been developed.

2. **Cash collected.** The traditional accounting system provides a set of books which record every customer's purchases, and their payments on account.

3. **Payments honoured.** Again, the traditional accounts can cope quite satisfactorily with the wage and salary bill, and payments to suppliers.

4. **Profitability.** At the end of the period, traditionally one year, though sometimes quarterly or monthly, there is a profit and loss account to show the results of trading for the period.

5. **Solvency.** Also at the end of the period, there is a balance sheet to show the firm's assets on one side and its liabilities on the other. Has it gained in assets? Has it lost? Has it more debtors than creditors? Has it more creditors than cash? Has it more work in progress than a year ago, or than the bank manager is willing to finance? These are just some of the questions that an executive without accounting training but with years of business experience can answer from looking at the traditional type of balance sheet.

If so many checks and useful pieces of information come from the traditional type of financial accounts, where lies the importance of the new techniques? What is missing from the traditional accounts?

The Cost Accounts

One important item which is not there specifically is costing. The financial accounts give only a very general picture of costs. But before a firm launches a new product or makes any important decisions on its price, style, quality or output, they want to obtain a fair idea of

what it will cost to make and sell, and the overheads involved.

Cost and works accountants are not new figures in industry. But it is only a short step from costing for the purpose of checking the accuracy of prices charged, to the development of a variety of techniques for checking on almost every aspect of the business—techniques which together go under the name Management Accounting. Hence it is the Institute of Cost and Works Accountants which has most diligently, among the various professional bodies, devoted its attention to management accounting.

What Management Accounting Can Do

Here are the main contributions of management accounting:

1. **Speed and comparability.** The management accountant wants figures for top management within days of the end of an accounting period, and he wants them to refer to an up-to-date period that can be easily compared with a previous, similar period, or with a budget.

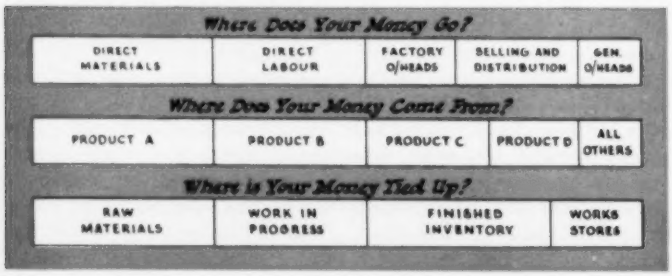
He is not in the least impressed by the fact that the firm's financial year ends on a certain day, say June 30. Those who are managing the business from day to day want just as useful a guide on August 15, soon after the financial year has started, as they do on May 15, when a financial year is nearing its end.

The management accountant will provide actual figures for the most recent period—generally a month—comparing the actual with budgeted figures. He will probably also provide cumulative totals for the year to date, comparing them with the same period for a year earlier. And to indicate the long-term trend, he will provide moving averages for the last 12 months and comparable previous periods.

2. **Real profitability.** Prices may go up or down—though mostly up, in recent years. The management accountant will look behind the fact that turnover has gone up, and tell you how much of the increase is due to higher prices, and how much is a real increase in volume of sales. He will look at the depreciation allowances you are making, based on the original cost of plant, and tell you that additional reserves must be set aside so that you can afford to buy new plant at higher prices. Some accountants are now applying a price index to all items of the balance sheet, including working capital, so that the full effects of inflation are allowed for.

3. **Real unit costs.** His most detailed work will involve the breakdown of costs of production so that it is possible to see how much, for each item, is spent on labour; how much on materials; and what proportion of your overheads should really be attributed to each unit of output; also what are the true selling costs per unit.

He will investigate not merely the cost per unit of output, but also the cost of running each department or branch and its profitability. He will investigate the cost of running each item of plant, the cost of employing each type of labour, or the alternative costs of different types of labour. And he will find out how much it costs not to run your plant, not to use your labour fully.



He will endeavour to develop standard costs for each item, so that the firm may budget for the cost of a particular product, or the cost of fulfilling a certain order—so that it is possible to compare the actual results of operations with the budgets. He thus provides a means of measuring the potential and actual efficiency of every operation—a means of using the 'rule by exception,' so that a glance down his figures will show quickly which operations cost more than expected, and therefore which need special attention.

4. **Yardsticks for progress and control.** He will provide a set of simple comparisons of figures and ratios appropriate to the particular type of business, which can be watched regularly: (a) as a guide to current operating, or 'tactical' decisions; (b) as a basis for evaluating executive and staff performance; (c) as a starting point for long-range investment decisions.

These control figures will be concerned with the following:

(1) The *business position*, as reported by the sales manager—comparing the most recent period with earlier periods for orders received, invoices issued and orders outstanding.

(2) The *operating position:* The works, shop or office manager will provide, on a comparative basis, figures for total employment of different grades of people, and other statistics relating to employment, such as the rate of absenteeism, accident rate, labour turnover rate, also total earnings and earnings per hour.

The accounting staff will provide further checks on the trend in employment costs, such as the ratio of labour cost to total cost; direct and indirect labour costs as a percentage of total labour cost; incentive-paid labour costs compared with time-paid labour; incentive labour costs compared with output of these workers; the proportion of total costs spent on overtime and shift-work inducements; the proportion of total labour costs resulting from extra payments arising from union agreements over and above the normal rate of pay if such figures are useful.

Why Firms Call in Consultants

1. Well-run firms who already use management accounting techniques call in outside consultants to help set up new systems of profit and cost measurement.

2. There are crisis cases, where a firm has got into financial difficulties, and the management are recommended to have a really thorough investigation made.

3. A firm which is not proving very successful brings in new directors from outside, or the firm is taken over and new directors are installed. Their first action is to insist on a thorough investigation.

4. Departmental heads are promoted to the boardroom, and they favour more up-to-date accounting techniques, to put them in the picture of how the firm is running.

5. There are some firms who install management accounting merely to 'keep up with the Joneses.'

6. Fear of the Monopolies Commission has recently caused quite a number of firms to have their real costs and profits investigated.

So much for labour costs. On the machinery side, the accounting staff should be able to give figures on machine utilization, expressed as a percentage of total machine time available; also the total of machine hours lost and their cost; and the maintenance and repair costs.

For materials, there should be regular, comparative figures on the stocks of finished goods to hand; the raw materials in stock; the work in progress; the materials used in operating; and the percentage of scrap.

Finally, there should be a report on any variations in cost from the expected or budgeted levels, whether due to labour, materials or other factors.

The operating position is described here in terms of labour, machinery and materials—a typical set of reports that can be of value to many firms. But others will need quite different operating reports, relating to the results of departments or branches.

(3) The *profit and loss* report will commence with a statement of sales, from which are deducted manufacturing expenses, both direct and indirect, for materials and labour; also other general and periodic expenses.

The gross profit so obtained will have deducted from it the selling and other general and periodic expenses, to arrive at the final profit. To facilitate comparison between periods, this breakdown of sales into various forms of expense and profit may be expressed as a breakdown of a single sales pound, or as percentages of total sales.

(4) The report on the *financial position* will measure various forms of capital against the volume of sales, in order to see whether, for the current volume, there is any abnormal situation. This is usually done by relating cash, debtors, finished inventory, work in progress and raw material stocks to sales, and expressing each in terms of sales days.

The report should also contain a Cash Forecast, usually for three months ahead, showing the current bank balance and all expected income of cash for the period, against all expected outgoings of cash.

Another item in this report, the Asset Variation Statement, should compare the present level of assets and liabilities of various types in the balance sheet, with the corresponding levels for previous dates, so that any important variations can be observed.

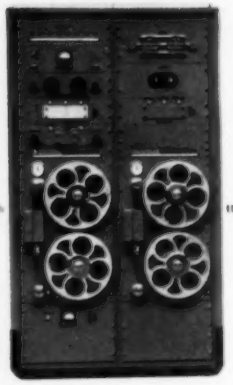
Finally, there is the measurement of efficiency with which the firm's capital in general is employed. Sales turnover should be expressed as a ratio of net worth, to measure the volume of sales won for each pound of capital in the business. Also the final operating profit should be expressed as a percentage of the capital employed, to measure the return on invested money. And the operating profit should be expressed as a percentage of sales, so that top management can consider whether they have a rising or falling margin, and how it compares with the customary margin in that type of business.

Each firm's need of accounting ratios differs from that of most others. And very often, just one or two figures are found to be key indicators of whether a firm is above or below the break-even point for that type of business. For example, an airline company generally knows the approximate percentage of passenger seats which must be sold to keep out of the red.

But when a firm is expanding or its product range is changing, or merely when it has a wide variety of products that suffer different fortunes, there are no simple measures of success, no simple warnings of impending failure. The more complicated the business position, the more important it is that there should be a comprehensive range of management accounting controls. *END*



The Peña group concentrate on four main fields: metals (tungsten contacts); electronics (radio, television, recorders); plastics (pick-up arm); and finance (Heinkel bubble car distribution is financed through them)



Why Firms Diversify

by William Guthrie

ONE in six company chairmen refers to diversification in his annual speech to shareholders. It is fast being accepted as a way of British industrial life, though it may not have become as fashionable here as it has in America during the past few years.

Diversification is the deliberate policy of producing goods substantially different from those 'traditionally' associated with a company.

A list of new, unlikely-sounding activities pursued by companies whose good results would seem to have justified them in concentrating on their original products, creates the impression that anyone can make anything if they put their mind to it. A picture emerges of industries invading each other's territory.

There are three broad reasons why companies diversify:

1—To insure against vicissitudes in their traditional sphere of operations;

2—To grow more quickly than is possible in a single line of business;

3—To make profits more quickly.

The first reason is purely defensive. The others appeal only to managements who are lively, progressive, seeking new outlets for talent, impatient for results. Behind the goals of quicker growth or bigger profits are more deep-seated management reasons for diversification. Product know-how or sales methods have reached saturation point on present products—why not apply them to something else? To companies like this, diversification is a challenge to be sought and welcomed.

Many cases of diversification are due to the recommendations of management consultants.

When to Diversify

Diversification is a risk, often viewed askance by directors and share-





An optical company makes furniture; an ice cream manufacturer goes in for scientific instruments. Is diversification the way to surer or quicker profits?

holders who know of hundreds of companies which owe their success to narrow specialization.

The time to diversify is long before the amber shows. So, when the future of the aircraft industry was looking rosy for some years ahead, **Hawker Siddeley** began to diversify. Now 70 per cent of their interests are outside the aircraft industry.

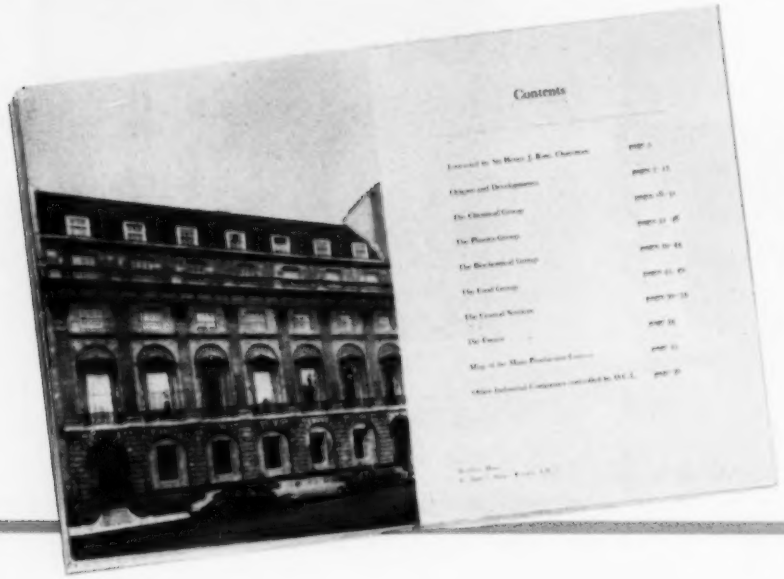
Changes in national or international policy can mean life or death to many companies and those which apply them. This includes the budget, hire-purchase controls, tariffs, and now the European Common Market. A company adversely affected by any of these may have to choose between collapse and diversification.

Diversification is a test. Management must be capable, lively, and imaginative. A list of companies that have successfully diversified in the past few years would contain a large proportion of the best managerial brains in the country. A company may struggle along successfully with poor management; let it diversify without improving the management, and the result will almost certainly be failure.

Diversification is a tonic. Soul-searching (from a company point of view) becomes automatic. Once accept the initial massive re-orientation of thought involved in diversification, and subsequent thinking becomes more fluid, more adaptable. There is less of the can't-be-done attitude.

Diversification is expensive, whether it means buying a company, or a patent, or setting up a new production line. New products, too, are notoriously easier to make than sell. A sales force has to be marshalled and trained. This all adds up to a very long bill before diversification is paying its way.

Here is how several companies solved these problems.



Shareholders in the Distillers Co. are kept up-to-date on their company's widespread activities. Their reasons for going into plastics, bio-chemicals, chemicals, and food were explained in a recent booklet

How they Diversified

Hawker Siddeley

This group diversified in several ways. Two are well-known, because they involve many millions of pounds. They bought industrial companies in Britain (spreading their activities to shipbuilding, diesel engines, etc.), and one of the biggest steel organizations in Canada (spreading their interests geographically).

Another, less spectacular form of diversification carried out by Hawker Siddeley, through their subsidiary, **Gloster Aircraft,** is of greater interest to smaller companies.

When the defence White Papers of 1955 and 1956 painted a bleak picture for military aircraft makers like Glosters, an Industrial Developments Division was formed. The company realized that many industrial problems could be solved by using aircraft components, modified where necessary.

Glosters are now selling not only goods, but know-how. They (like all aircraft concerns) have built up over the years a research team accustomed to having to solve problems within strict time limits. They regularly take new designs from drawing board to prototype and into production, all within two months. They are accustomed to working closely with each other. The sales team cooperate closely with customers, ensuring prompt service and maintenance. It is these teams which Glosters are exploiting in the industrial field. And it is for these teams that Glosters have spent thousands of pounds on a 35,000 sq. ft. building with the latest research equipment.

The most striking thing about the new division is the youthfulness of its management. The whole project is in the charge of the chief research engineer, E. W. Absolon, who is 34. The average age is under 35.

The new division began in a very small way in September 1956 after an exhibit at the Farnborough Air Show brought in inquiries.

Taking a closer look at their special interests, it may be said that generally speaking, wherever air or liquid has to be moved, measured or controlled, Glosters believe they can apply their techniques. The new sales force has had to build up contacts to find out just what industry requires. Now, 18 months later, the preparations are paying off. Orders have gone up by 600 per cent in the last six months.

Among the aircraft components which have industrial significance are:

Flowmeter. Used for aircraft testing. Measures high rate of flow as well as pressures up to 4,000 p.s.i. Gives remote indication. Has extensive industrial applications—in fact, wherever large amounts of paste, slurry or syrup are processed at great rates. Examples: toothpaste manufacture; sugar refining.

Heating System. Applies to all vehicles—cars, trains, buses. Developed for a light plane. Uses ingenious combination of ram effect caused by vehicle's speed, plus normal re-circulating type of heating. Avoids condensation, fatigue.

Fuel Proportioning System. Big applications in fuel industry. Facilitates tanker fuelling. Present method requires individual loading and arrangements to ensure that the ship remains stable. With this device the

process might become foolproof, automatic, and much faster. Also applies to safe, accurate dilution or blending of all liquids.

Electro-hydraulic Servo. Operates aircraft controls. Made in large amounts. Simple to manufacture, ingenious design. Response more accurate than competitive designs. Big application in electronic machine tool control, making it more accurate, reliable and cheaper. Ancillary electronic apparatus is rugged, transistorized, 'potted' in blocks of synthetic resin, and ideal for industrial use.

Torque Meter. Measures amount of power required to turn a wheel. Has extensive use in mining where hundreds of h.p. are lost through failure to detect 'sticky' rollers on conveyors.

There is a minimum 'top management' interference with the new division. But Mr. Absolon holds several different kinds of meetings with staff, including:

Project Initiation. Meetings held monthly. Sales staff state requirements which have emerged from industrial visits. Research staff evaluate.

Project Review. Monthly. Progress check. Work load on division is estimated.

Product Progress. Bi - monthly. Production programme co-ordinated with delivery schedule and works load.

Dowty Group

At one time Dowty were almost solely dependent on the aircraft industry. So they formed an industrial side to their business. As a result of long research and development, they now have a big N.C.B. contract for mining equipment which enables them to take a less serious view of the aircraft recession. But it took considerable faith in the ultimate success of the venture to spend money on research and development.

Camp Bird

This group's activities receive considerable publicity in the financial columns, because of their continuing acquisition policy. The policy is closely defined; the purchase of complementary interests in traditional mining (metals) and in some of the newer industrial fields exploiting these metals.

Camp Bird took the unusual step of appointing a Shareholder Relations Counsel in order to make their shareholders 'the best informed in the country.'

Other companies which follow acquisition policies could well follow suit. Many of their shareholders have no clear idea about their companies' policies, what they do, or what the risks are.

Peña Industries Ltd.

Good management is the essence of their diversification-by-acquisition. The group now have four main divisions—metals, electronics, plastics, finance.

Major-general E. L. Bols regards the group as a club with a queue of companies waiting to join. Peña buy brains, managerial and technical, as well as products. Brains are more important.

Peña started as a copper-mining concern in Spain, at the turn of the century. It became unprofitable but the Spanish State took it over and paid some compensation. This was used towards the purchase of another copper mine, then a wolfram (tungsten ore) mine—both in Cornwall.

Next move was the purchase of **Tungsten Manufacturing,** at an advantageous price, giving Peña an interest in tungsten processing as well as raw ore. Tungsten is used extensively for contacts in the electronics and electrical industries. It was a short step, therefore, to the purchase of electronics companies (including **Peto Scott** and **Cosmocord**).

Cosmocord had considerable plastic moulding interests and these were extended to serve group requirements.

One company which was acquired had considerable banking connections. Most of its other activities were handed back to the former owners but the banking connections were developed. Gradually a group of fast-growing finance companies were built around this nucleus. Result is a reservoir of cash for the purchase of 'any business suiting Peña's activities which turns up on the bargain counter.'

When a company is considered for purchase, General Bols assesses the managers while the group accountants assess the company. If management, product and acquisition terms are right, then Peña buy. But if the managers have not the faith in themselves, the company or the product, to see them through to success—if they want to hand all executive responsibility over to Peña—then Peña lose interest.

Subsidiaries of acquired companies stand or fall according to their managerial efficiency. If not well man-



Camp Bird, who have interests scattered all over the country, are now concentrating on controls for every type of industry. Among their present activities are:

RADIO AND T.V. (Ambassador) Brighouse; **SAPPHIRES** (E-V Ltd.) Bletchley; **FANS, MOTORS** (Limit Engineering) Islington; **PLYWOOD** (Norcross Panel) Islington; **ELECTRONIC RESEARCH** (Langham Thompson) Bushey; **PLASTIC CABLES** (Duratube) Feltham; **CONTRACT FURNISHERS** (Hamptons) London, St. Ives; **COLD FORGING** (Cold Forging Ltd.) Sunbury; **PRECISION ENGINEERING** (Hanworth Engineering) Sunbury; **PLASTIC EXTRUSIONS** (Tenaplas) Upper Basildon; **ELECTRICAL CONTRACTS** (Hartley Installations) Swansea, Edinburgh; **OFFICE EQUIPMENT** (Hartley Electromotives) Shrewsbury.

aged, they are abandoned forthwith.

Every company (there are about 40) in the group enjoys maximum autonomy with minimum interference from the central board. But certain main functions are centralized, to avoid duplication of effort.

So that the management of member companies can have an opportunity of seeing what goes on in the rest of the group, General Bols holds meetings every six weeks, each time at a different company.

For Peña, diversification has paid off. A loss carried forward from the Spanish activities is expected this year to become a profit of £300,000. Shareholders are kept informed of developments and acquisitions by circulars and half-yearly statements.

General Bols sums up Peña's diversification policy:

"Our group cannot succeed by the mere conglomeration of successful enterprises; it depends on sound central planning and the availability of men to execute it."

S. Smith & Sons (England) Ltd.

Traditional products of this firm are car instruments. Profits last year were higher than the previous two, despite both car recession and credit squeeze.

Reason: diversification into aviation instruments, auto pilot and flight systems; industrial recording instruments for traction, for textiles and for machine tools; clocks, watches.

Booker Brothers McConnell

Traditionally the company centred on British Guiana as sugar producers, refiners, shipowners and rum merchants. They diversified first into a Commonwealth grocery chain store. Recently, in association with another concern, they bought a controlling interest in an English grocery chain store. This is to balance the geographic spread of the business and to provide a training ground for staff for overseas stores. Having or getting the right managers is the critical factor in their expansion.

Chairman J. M. Campbell says Bookers will not take on new businesses unless they are already well managed, or the right men can be found. Believes in perpetual process of devolution from the central board to the perimeter. Last year he resigned several directorships of companies in the group to make way for men 'on the perimeter.' They in turn are relieved of some responsibility by the promotion of others.

Diversification is succeeding here. With the unsettled political situation in British Guiana, the company felt they should spread their interests. The proportion of profits from Guiana interests has been reduced from 66 to 56 per cent, and is continuing to fall.

Some time ago they bought **George Fletcher and Co.,** manufacturers of sugar refining machinery. Later, an electronics company, **Reliance Manufacturing Co. (Southwark)** joined the group.

Wilmot Breeden (Holdings)

Policy of diversification has been justified, says the chairman. The company at one time concentrated on components for car industry—locks, handles, etc. Last year profit from car activities was seriously reduced.

But the newer **Flight Division,** set up as a result of foresight, expanded sales considerably. The division makes components for aero engines and gas turbines. Outlook is very favourable.

This company also diversified into heavy duty tipping equipment for commercial vehicles through a subsidiary, **Telehoist Ltd.,** which further reduces dependence on the car industry.

Melbray Group

Manufacturers of food products and ice cream with large seasonal fluctuations, they acquired **British Rototherm,** who make temperature gauges and scientific instruments, to help even out profits and risk.

Merx Optical

This group's activities are so out of keeping with their title that they are to be re-named. As well as optical products, they manufacture television aerials and folding furniture. The object is to obtain a constant output from the factories by making suitable new products, strengthening their competitive position.

The Other Way

The opposite of diversification sometimes takes place. For instance, the **Pilkington Group** recently closed down Ashdowns, their subsidiary which forms fibre glass laminates into components for the motor, domestic appliance and electronics industries.

Reason: Long-term prospects did not justify the further substantial investment in Ashdowns which would be required. Pilkingtons decided that it would be to the greater advantage of the group as a whole if these resources were concentrated in the main business of glass-making. Fibreglass, they point out, has a big future. But the decision shows that there are times when narrowing instead of widening horizons commends itself, even to a very big group.

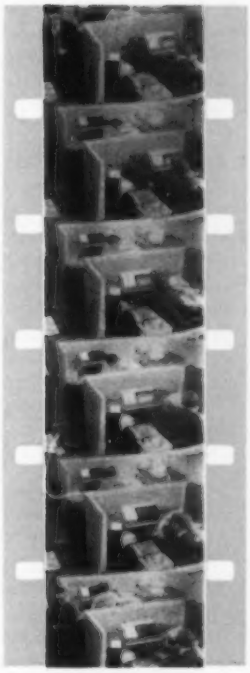
The recent move of **E.M.I.** is even more interesting. E.M.I. started as the Gramophone Co., one of the pioneers in gramophone records. When wireless sets sold by the million it was believed that records were doomed. The company therefore made wireless and television sets under the H.M.V. name, while continuing the records business. Now gramophone record sales are rising unprecedentedly. Largely because of this, profits almost doubled this year from £2.4 million to £4.7. So E.M.I. are streamlining their interests.

They are handing over wireless and television consumer sales to another company, although it will take £1 million of the increased profit to compensate work people for redundancy and write off discontinued production lines.

These are a couple of the 'exceptions that prove the rule.' There is undoubtedly a major movement towards diversification. More and more company managements are beginning to realise that when they have built up a good team of sales, research and development, and production men who understand one another, then management should be prepared to consider expansion into any field which shows promise.

VD

Frames from a memomotion film used on Cranfield's clerical work study course



Executives Learn O&M in Four Weeks

New training course picks out the real principles of clerical work study

by Peter Spooner

WHEN an office boy saves himself a bit of unnecessary work by moving a rubber date-stamp from one side of his desk to the other, he is practising a rudimentary form of organization and methods. With this in mind, some people take the view that O and M is little more than a fashionable name for the commonsense which is used automatically in most offices.

They may be right. Certainly it is better to look at O and M in this light than to insist that it represents a bunch of new techniques. But the fact remains that to use commonsense *systematically* you need the sort of mental discipline which is developed by training and practical experience.

For some time, the training of O and M has been almost entirely in the hands of a few big firms. They are concerned with their own requirements and most of the instruction is actual field work. The smaller firm has had to rely on occasional pickings from the big chap's O and M department. Now, however, the position is improving, for one or two bodies have begun to develop general-purpose training courses. In time, these will increase the supply of practitioners and thus bring O and M within the reach of more firms.

Among the pioneers is the Work Study School, Cranfield, which now offers a four-week course in clerical work study. There are two reasons why this development, the first of its kind in Britain, is of considerable interest to businessmen. One is its direct value to firms whose own training resources are limited. The other—of much wider application—is that in drawing up the syllabus the school has had to isolate the real principles of O and M from the waffle which surrounds this subject.

Input and Output. The first course was held a few months ago. Among its 11 members were office managers, company secretaries and accountants. All of them had considerable know-

ledge of clerical problems; few had work study experience.

Their comments, when the course ended, were pretty favourable, and for this reason the second course is being run on the same lines.

The purpose of the training? Clearly it is designed to give much more than an 'appreciation' of the subject—but it does not go to the other extreme and try to turn out professional O and M men who will devote the rest of their careers to this work. Although the school hopes that ex-students will practise O and M in their own firms for several years, it also believes that the experience thus gained will help to equip them for promotion to senior administrative posts.

The implication of this belief is that O and M knowledge, so often buried in a special department, should be encouraged to grow *upwards*. Also that experience of using it makes a worthwhile addition to the skills of top management.

How They Learn. The first object of the training is to develop the right mental approach. The second is to superimpose on this a working knowledge of method study.

Much of the training is practical. For these sessions the course is split into three or four syndicates. The practical element is introduced briskly: within a few hours of starting the course, the students are scratching their heads over the first of a series of projects, which progressively become more difficult.

The school—part of the College of Aeronautics—stands in the middle of nowhere in particular. Its inaccessibility enhances its value as a residential training centre. Social activities are soft-pedalled, and the students generally devote three or four evenings a week to their syndicate tasks. Even the bar becomes another workroom.

Lectures are given by the staff and also by visiting speakers, usually from business firms. Most of them serve as introductions to the practical sessions, but there is a sprinkling of background subjects. These include:

—The history and development of work study.

—Personnel selection (by a psychologist).

—Staff grading schemes.

—Rapid reading (appreciation lecture and demonstration films).

—Electronic computers (how the possibility of installing one in ten years' time should influence the O and M work which is done today).

—Principles of organization.

—Budgetary control and standard costing.

What They Learn. How has the school compressed the essentials of O and M practice into a four-week course? Here, briefly, is the sequence in which different activities are presented.

First comes process charting—the basis of method study in the office. The students are shown how to use the standard symbols. Then, as their first project, they have to chart a simple procedure involving a few forms.

This case-study is a 'live' job with which a member of the teaching staff (all recruited from industry) has been concerned personally. The advantage of using such material throughout the course is that by questioning their instructors the students can obtain as much information as the original investigators. Before the project starts, they are given either samples or mock-ups of every document which affects the procedure. Later, they have to analyse the job and develop a better way of doing it. Their recommendations are discussed by the full course, and are then compared with the action which was taken by the firm.

Meanwhile there are lectures on advanced charting and other methods of recording activity, including string diagrams. The students are told how to select jobs for investigation; how to install new methods; and how to assess the savings.

In Project 2 they turn from system work to the layout of workplaces. Each syndicate has to study a simple postroom job and eliminate unnecessary movements.

The first week ends with a lecture and exercise on the use of photography in work study (including chronocyclegraphs and memomotion) and an advanced charting project.

During the second week, the students are introduced to work measurement. It is, however, a cautious introduction—the general theme is 'Danger: keep off until more experienced.' For one thing, the use of work measurement in offices raises many problems. For another, the school doubts that anyone can be taught to make accurate ratings in less than six months; in fact, one of the main functions of the stop-watch exercises is to demonstrate the inconsistency of ratings by different people. On the other hand the school believes that if an O and M man has the ability to make rough-and-ready assessments for his own information, it may help him considerably when he is developing new methods.

The fourth and final project begins at the end of the second week and goes on, more or less continuously, for the rest of the course. Much tougher than its predecessors, it covers all aspects of a long and complicated order procedure.

The procedure is largely manual. Because there is a temptation to mechanize at all costs, the students have to start this project by making as much improvement as possible on a 'petty cash' budget. Thus their attention is drawn to one of the biggest snares in O and M work—the common fallacy of estimating the value of a new, mechanized system by comparing the costs with those of a manual system which is running badly.

When the old system has been brought to the peak of efficiency, a true assessment is possible. The 'answer'—based on the results of the original study—is that some things should be left as they are, while others should be mechanized.

It is the first project to place much emphasis on mechanization. But the students have already had talks on various types of equipment, and have spent a lot of time in the school's office equipment laboratory, to watch



From lectures and demonstrations the students get a basic understanding of O & M. But most of the course is devoted to





syndicate exercises, using 'live' case-studies. Reports are tape-recorded and played back to check presentation

a number of manufacturers have contributed.

The laboratory contains a representative range of equipment, including duplicators, photocopiers, filing equipment, planning charts, adding and calculating machines, and even a small punched card installation.

The intensive work on Project 4 is relieved by lectures and demonstrations on a number of subjects. A full day is devoted to activity sampling, the short-cut work study technique described in the January issue of BUSINESS (pages 72 to 75).

The **Art of Selling.** A subject which runs all through the course is reporting. Realistically, the teaching staff hold the view that even the best O and M investigator is not going to get very far if he lacks the ability to present a good case to top management.

Oral reporting exercises are introduced on the third day, before the students have become too accustomed to their new surroundings and new colleagues. During the course, each of them has to talk on (1) a subject of his own choice; (2) a subject given to him in advance; and (3) a subject given to him at the last moment. All of these talks are tape-recorded, to be played back at private tutorials.

In addition, tape-records are made of the syndicate reports at the end of each project.

For written reports, the students are encouraged to use a standard three-part folder. Their proposals, set out as cogently as possible, appear on the centre sheets. On the left are the forms, process charts and other documents of the existing method; on the right, those of the proposed method. Thus the whole case is presented in an easily assimilated form.

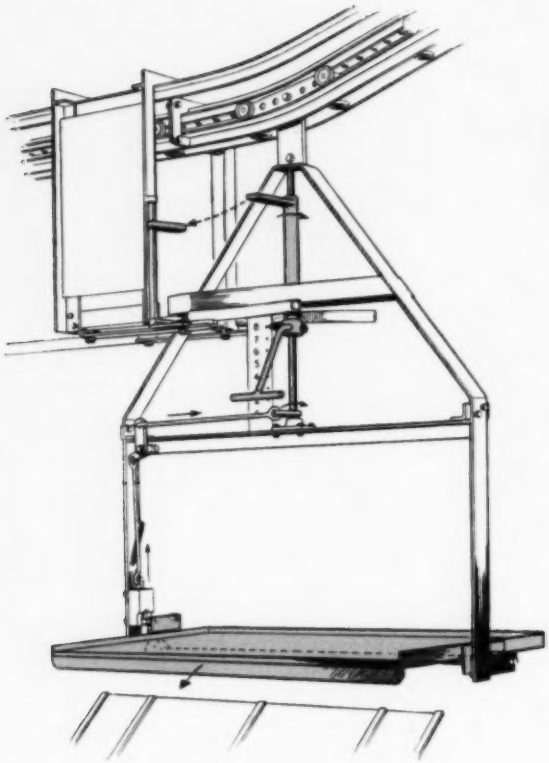
Follow-up. The school does not hold examinations or give diplomas. Individual assessments are made only if the students' firms ask for them.

When a student is enrolled, the teaching staff try to find out something about his experience, often visiting his firm. This helps them to determine the time which should be spent on simple exercises and on different types of equipment. At the end of the course, the students are invited to contact the school if they run into difficulties while applying what they have learnt.

The school takes pains to keep in touch with the outside world. Members of the teaching staff may accept part-time O and M work with private firms—on the condition that this material can be used as case-studies in subsequent courses. *END*

BUSINESS casebook shows how four firms have used pre-

How to Think



S. Noton Ltd. designed this carrier themselves. Simple indexing device tips tray forward, allows work to slide off at required station. Sketch by 'Mechanical Handling'

THE description of I.C.I.'s new paint warehouse in last September's issue of BUSINESS revealed something of the new range of uses opened to conveyor systems by the introduction of indexing or pre-selection devices. These, it will be remembered, consisted of a simple key-set device on the trolleys of an overhead chain conveyor which can route the trolley to a given station on one of several floors, transferring it automatically from main track to loop line and hoisting or lowering it as required.

Other impressive installations, particularly in the motor industry, have taken place in recent years. In one case the conveyor is even controlled by a computer.

But what is in it for the smaller firm? The best-known types of indexing conveyor involve heavy capital costs. Are selective systems therefore ruled out for companies with restricted capital resources?

The examples that follow show that this is not necessarily so. In some cases a firm's native ingenuity has managed to provide a cut-price solution to the conveyor problem. In others, intelligent use of commercial indexing systems has allowed such savings to be made, that relatively heavy expenditure has been made good in a short time.

The main point is that pre-selection on conveyors need not always be so comprehensive as in the motor industry. Very much simpler set-ups can often do just as good a job.

selective systems to save time, space and labour

Make Conveyors for Themselves

by Stephen Rose

1 This firm designed their own selection system

AN overhead conveyor with pre-selected discharge stations has been working at the Walthamstow factory of S. Noton and Co. Ltd. for over six years. It features a standard, inexpensive monorail, fitted with pre-selection equipment that was devised and made by the firm's own engineering staff. This is the set-up:

Materials required for the production of the firm's travel goods are loaded at the stores on trays suspended from the monorail. Each tray has a trip lever, which can be adjusted to one of ten positions, representing ten discharge stations on the circuit.

When the carrier arrives at the station for which it is intended, an arm catches the trip lever. This tilts the base of the tray and allows the goods on it to slide off on to a chute or roller track. Once past the unloading point, a locking mechanism straightens the tray's base again.

The conveyor is 900ft. long, but is soon to be extended another 230ft. into an adjacent building. It travels at 40ft. per minute—slowly enough for goods to be loaded by hand. The 150 carriers on it keep about two days' production supplies circulating. This has meant a great saving in floor space, as production lines only take off the conveyor what they need at once.

Special requisitions can be ordered from the stores by a 'rocket' carrier attachment. The rocket is simply a small, cylindrical container on the end of a metal strip, which clips on to the frame of the carrier trays. A stock requisition is placed in the container and the tray's trip lever is set at 10 (code for the stores). When it gets there, the rocket is mechanically released, drops into a box and rings a bell. This alerts the storeman, who then takes immediate action.

This system, though elementary, cuts out the need for a telephone link between stores and production lines, and saves workers having to go to

the stores in person with a requisition.

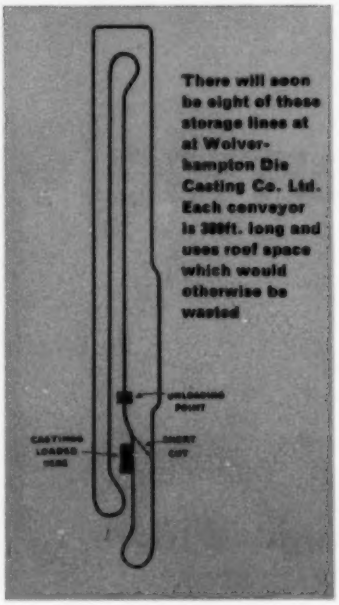
The installation cost about £4,000 in all, but savings covered this expenditure in 1½ years. Among other benefits, it has helped bring about the 120 per cent increase in factory capacity that has taken place at the works since the war.

2 Overhead conveyor solves their storage problem

WOLVERHAMPTON Die Casting Co. Ltd. co-ordinate a slow casting process with fast trimming and finishing lines by running the casting machines day and night, but only working normal hours on the subsequent processes.

This means storing the night shift's production. Previously castings were kept in pallet boxes. But too high a percentage got damaged through handling, storage took up a lot of space, labour overheads were high, pallet boxes cluttered the trimming and finishing lines, and quality control was difficult because castings were not necessarily finished in the order they came off the casting machines.

All these difficulties have been overcome with a new conveyor installation that has been running since May last year. This is how it works:



● An overhead circulating conveyor of the twin-track type is hung with 'Christmas tree' carriers—steel rods from which a number of arms project at staggered intervals.

● The conveyor automatically brings an empty carrier to a loading point by the casting machine, and stops it there. The casting operator loads castings, as they are produced, on the projecting arms of the 'tree.' This is so designed that castings cannot touch each other and suffer damage.

● When a carrier is full, the operator presses a button. This activates a mechanism that makes pusher dogs on the upper conveyor track engage the carrier on the lower one, and so take the carrier into circulation.

● The loaded carrier is taken up into the roof, where the storage loop winds its way. Meanwhile an empty carrier automatically replaces it at the casting station.

● The loaded carrier continues to circulate until it reaches a stop point. If the storage loop is empty, this will be the unloading point where the trimming and finishing lines start. But if other carriers are already in storage, the fresh load stops a preset distance behind the previous carrier.

● During the night, the storage conveyor neatly piles up the production in this way. When it is full to capacity, no more empty carriers can arrive at the casting point, and so the system can never be overloaded.

● A call button is situated at the first work station on the trimming and finishing line. When the operator there requires work, she presses this button and the conveyor sends her the next loaded carrier. At the same time the empty carrier is taken into circulation again, and proceeds back to the casting point.

Every time fresh carriers are called forward by the finishing operator, all the others in the storage loop automatically move forward one stop.

As a precaution against casting breakdowns (which might mean that the storage loop is empty for a while) a short-cut has been fitted into the system. By pressing an alternative button at the casting point, carriers can be routed straight to the finishing line (only a few feet away in actual distance) instead of having to travel all the way round 389ft. of storage loop.

Advantages of the new system are considerable. Handling has been eliminated almost entirely. Storage space has been freed for production, and layout of production lines is improved, as pallet boxes no longer have to be trundled between them. Quality control is now more effective; castings are finished in exactly the same order as that in which they were produced. Above all, damage has been cut down to negligible proportions.

Capital cost of the installation was heavy (there are several of these casting lines). But it should not be long before the outlay is recouped. Already a direct comparison reveals that the new set-up needs only four workers for every ton of castings produced, against six with the former method. This, together with gains from better quality and savings in space, means that the conveyor cost of approximately £13 a foot is amply justified.





Right: Winding line at Brook Motors Ltd. Work arrives on the belt, stops opposite the station where it is required, and is slid off on to the reserve table. Above: Indicator panel shows where work is needed

3 Selective belt conveyor cuts their costs by 20 per cent

FOUR years ago Brook Motors Ltd., Barnsley, installed a selective conveyor system of their own design in the winding department of their electric motor factory. As a result, handling of unwieldy stators has been eliminated, production control simplified and waiting time for winding operators considerably reduced —cutting production overheads by almost 20 per cent.

The department has 190 winding operators arranged in five lines, each line having its own feed belt conveyor. By the side of each operator is a reserve table, connected to the conveyor by a short slide. When work is taken off the reserve table and put in the winding frame, a switch arrangement makes a red light flash on a central control panel, indicating that fresh work will soon be required by that operator.

The controller selects a job suitable for the station in question from a classified order file. She marks on it the station number, and passes it through a hatch to the stores. Now a green light shines on the control panel, to show that work is being prepared.

In the stores, parts required for the order are assembled in a tray marked with the station number to which they will be sent. They are brought to a distribution point where an arrangement of roller tracks allows work to be pushed to one of the five belt conveyors serving the five winding lines.

At the head of each conveyor is a dial-set selector switch. When the distribution operator dials the station number required, a photo-electric counting mechanism is alerted. As the conveyor starts moving, a light beam shines through holes in a disc that is synchronized with the belt. Each hole represents a work station, and when the pre-set number of holes have been counted, the conveyor stops, and the work is at its destination. The winding operator slides the parts off the belt on to the reserve table. There its weight operates the switch device again; the green light goes out on the control panel, showing that work has arrived, and the conveyor selector switch, which is locked until now, is released.

Another effective idea used at this works is a belt conveyor controlled by photo-electric stops. It feeds work from the winding stations to connecting stations. When a stator on it breaks a light beam, the band is stopped. It starts again only when one of the connecting stations needs more work. Then the feed band transfers the stator to a subsidiary belt (leading to the connecting station) and keeps moving until the next stator reaches the stop point and again breaks the beam.

4 They found that push-buttons don't always pay

SELECTIVE conveyors are not necessarily suited to every application. This was the experience of Dowty Mining Equipment Co. Ltd., Ashchurch, where human fallibility threatened to undermine a theoretically satisfactory system.

The assembly line for this firm's hydraulic pit props consists of a number of sub-assembly and simple

metalworking operations. Work used to be taken in batches from operation to operation on stillages, but this meant cumbersome handling, took up space on the production line, and made it difficult to control what was going on.

In August 1956 a twin-rail overhead indexing conveyor was installed, and the assembly line was reorganized around it. The conveyor was hung with carriers, so designed that each could be loaded with all the parts and materials required for final assembly of a pit prop.

As carriers arrived at each station, the parts were taken off and the relevant work carried out; the assembly was then put back on the carrier and dispatched to the next station. At the end of the line, finished props were taken off and the empty carriers returned to the stores for re-loading.

Each work station had a press-button with which to 'call' carriers forward. Until called, they remained banked behind an automatic stop point. To prevent overloading, cut-out stops were fitted, so that when a storage bank was full, the conveyor refused to send any more carriers from the previous station.

This system created bottlenecks which could not be by-passed. Stations that could not dispatch work were also unable to call down fresh carriers. Supervisors found they were spending most of their time chasing bottlenecks from station to station, effecting remedies which cured nothing.

Now the push-buttons have been taken out again. The conveyor has been modified to normal set-speed operation. Work at individual stations has been carefully timed, and synchronization of individual operations and conveyor has been achieved.

The firm find that operators now work to the given rhythm satisfactorily, though they were unable to keep up an equivalent output when they were responsible for their own tempo.

Selective conveying is still used, however, on a separate line serving inspection bays, welding and paint spraying booths. Here it has paid great dividends.

This is the system

▶The last operation on the set-speed conveyor incorporates a device that automatically loads each prop on to a carrying rig on the indexing conveyor.

▶This conveyor feeds three junctions and branch lines (see diagram). Banks of props requiring inspection build up at each junction point.

▶When an inspector requires fresh work, he presses a call button, and the first carrier in the queue is shunted, quite automatically, into his bay. Simultaneously the prop that has just been inspected is picked up by the conveyor, and is fed back into the main system.

▶Next comes a series of welding stations where size adjustments to the props are made by welding on extensions. Once again there are a number of branch lines, each with its own storage bank, and controlled by press-buttons.

▶After welding is complete, the props rejoin the circulating conveyor and are taken to a paint-spraying booth. Here they stack up until called by button from inside the booth.

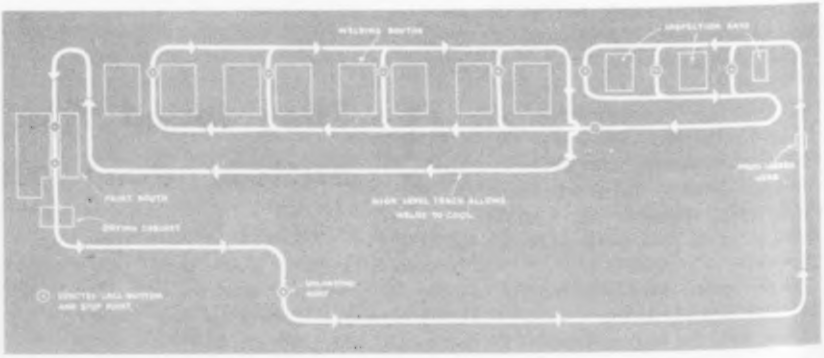
▶Emerging from there, the conveyor carries props through a drying oven and straight out to a loading bay, where lorries await the finished product.

▶Empty carrying rigs are then dispatched back to the loading point.

The system works partly because higher grade labour is employed compared with the assembly line, partly because the branch line arrangement makes it difficult for bottlenecks to build up. It has produced very tangible benefits. The number of people working on this 450ft. conveyor is now one less than before reorganization. But today they handle over 33 per cent more work than before and earn almost twice as much bonus. In addition, space has been saved and handling costs are considerably reduced. The outlay on this part of the installation was in the region of £8,000. *END*

Bibliography note: *Readers are recommended to refer to two previous* BUSINESS *articles giving further case-histories on selective conveyor systems:*

- *This Electronic Conveyor Gives Flexible Mass Production, June* 1957, *pp.* 90-94.
- *Conveyorized Warehouse Speeds Orders, September* 1957, *pp.* 84-87.



This indexing conveyor at Dowty Mining Equipment Ltd. acts as a transfer device. Pit props are 'called' as required to (a) inspection bays; (b) welding booths; (c) paint booth; (d) unloading point



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Battle-drill for Export Sales Executives

by W. R. Mills

1. Business Preparations before Departure

Here is the first of a series of check-lists written for BUSINESS by a consultant with 11 years experience as a senior sales executive overseas.

BUYERS and importing agents are usually busy men; they are often preoccupied with matters other than the object of your visit. Well begun and well conducted negotiations can break down, due to your having to delay matters for reference to your head office.

In certain circumstances reference to your head office cannot be avoided, but when the delay is due to your not being properly briefed before leaving home, it creates a poor impression of you and your organization.

Times will occur when you must depart hurriedly abroad, when something has gone wrong, or it is desirable to seize an unexpected opportunity, but for a normal sales tour there is a proper procedure to be followed:

1 As soon as you are assigned, decide how much time you reasonably need for preparation and outline your itinerary accordingly.

2 Check your travel timings and make provisional reservations.

3 Get letters off to your contacts abroad advising them of your proposed visit, its purpose, and asking them to suggest alternative dates if your proposals are not convenient.

4 Check that your passport is valid and that your World Health Organization International Certificates of Innoculations are in order.

5 Your passport office will advise you on both matters. If there are certain innoculations to be taken, you should get these done. Most national airlines and major travel bureaux run a medical department, which administers the innoculations and issues the necessary certificates for a small fee.

6 Get two dozen passport photographs taken. They are so often demanded by consular and immigration authorities, that one needs an adequate supply. Draw from the respective consulates the necessary application forms for visas, complete them and hold them in readiness to send in when the dates of your journey are confirmed. If you intend to travel into areas where there are religious disturbances, you may be required to take with you a certificate of religion.

7 At this juncture, you can do nothing more about the travel arrangements, until you receive replies from your contacts abroad. Therefore, turn your attention meanwhile to your brief.

(a) Draw up a memorandum of data in respect of every country to be



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4 Check that your passport is valid and that your World Health Organization International Certificates of Innoculations are in order.

5 Your passport office will advise you on both matters. If there are certain innoculations to be taken, you should get these done. Most national airlines and major travel bureaux run a medical department, which administers the innoculations and issues the necessary certificates for a small fee.

6 Get two dozen passport photographs taken. They are so often demanded by consular and immigration authorities, that one needs an adequate supply. Draw from the respective consulates the necessary application forms for visas, complete them and hold them in readiness to send in when the dates of your journey are confirmed. If you intend to travel into areas where there are religious disturbances, you may be required to take with you a certificate of religion.

7 At this juncture, you can do nothing more about the travel arrangements, until you receive replies from your contacts abroad. Therefore, turn your attention meanwhile to your brief.

(a) Draw up a memorandum of data in respect of every country to be



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visited, and include the following specific points:

i. Population.

ii. Distribution of population by territory, race, etc.

iii. Principal towns and cities, their populations, distances apart, and transport facilities.

iv. The same particulars in respect of neighbouring countries.

v. Dispositions of ports and frontier trading posts.

vi. Local currency and exchange rates.

vii. Official import, re-export and export statistics over the past five years (especially with regard to your group of commodities). These figures, if not available from the Board of Trade, will be obtainable from the commercial attache of the embassy or consulate of the country concerned.

viii. Full particulars of tariffs, import restrictions and regulations with regard to your specific group of commodities and its advertising material.

ix. Current freight rates and shipping time involved to the country concerned.

x. Available particulars of local newspapers, cinema and radio advertising. This information should be obtainable from your advertising agent.

xi. Finally, try to get from the commercial attache of the country's embassy or consulate, or from the branch or correspondent of their national bank in your capital city, any other official pamphlet of industrial or commercial interest concerning that country.

(b) Place this memorandum in a separate file cover for each country, and, having collated this general information, begin to compile a second memorandum in respect of each country concerning your company's dealings.

These memoranda are compiled by making extracts from correspondence, sales statistics, etc. They should include:

i. Fullest possible details regarding your present importers and distributors and their predecessors, if any.

ii. Particulars of any other firms who have applied for the distributorship or import agency at any time.

iii. Statistics of sales to the country over the past five years, showing brands, specifications, packings, quantities, terms and commissions, etc.

iv. The background of any past disputes or special arrangements with the distributors or importing agents.

v. A summary of the existing situation, orders in hand, anticipated, recently cancelled or under consideration.

vi. Particulars of any special advertising campaigns in progress, planned, or recently carried out.

8 When these two sets of memoranda have been drawn up and digested, you will be in a position to interpret intelligently your written terms of reference or your export manager's verbal brief, as the case may be.

9 When studying your briefing, whether verbal or written, make liberal notes and consider your instructions with regard to each country in the light of the memoranda which you have prepared.

10 As the result of this study, you will start to develop outline plans in your mind and appreciate various courses open to you. Make a list of all likely eventualities that may befall your negotiations, and go back to your export manager for additional terms of reference, e.g.:

i. "If S—— in Nassau maintains his disinterested attitude, may I offer the agency to T——?"

ii. "If D—— in Nairobi insists on 90 days' credit are we willing to concede?"

iii. "What is our lowest quotation for 'X' to Messrs. Y—— in Rome?"

If all these questions are intelligently framed, the answers will prove invaluable to you on your assignment and will save a great deal of time, expense, and loss of prestige by enabling you to make decisions on the spot without referring back to head office.

11 At this stage, replies should have been received from your overseas contacts. If all is convenient, you can confirm your hotel bookings, send off your samples, and pass your visa application forms to the respective consulates.

Unless there is a customs union between your country and those on your itinerary, avoid carrying samples. They can be the cause of considerable embarrassment at ports of entry, and may necessitate your paying duty from your expense funds, which you can ill afford. If you send your samples to your contact beforehand (by airmail or air freight if necessary), they can be cleared without fuss before your arrival.

12 You can book your hotel accommodation either through your travel agent, direct, or through your contact abroad. If you are visiting tropical countries, you are well advised to book an air-conditioned room with private bath.

13 If any of your importers or distributors deal with your company through buying agencies in your own country, call on them before departure and tell them of your intentions. In all probability they will offer you additional information.

14 Lastly, try to have a second business contact in reserve in each country on your itinerary. If not, seek the help of your business friends and get written introductions so that even if the reserve contacts are not in your line of business, you have a foothold from which to start new lines of enquiry, should your negotiations with normal contacts break down.

By now you can consider yourself properly briefed, but whilst you have been carrying out business preparations you will have been attending also to personal preparations, which are discussed in the next issue of BUSINESS.

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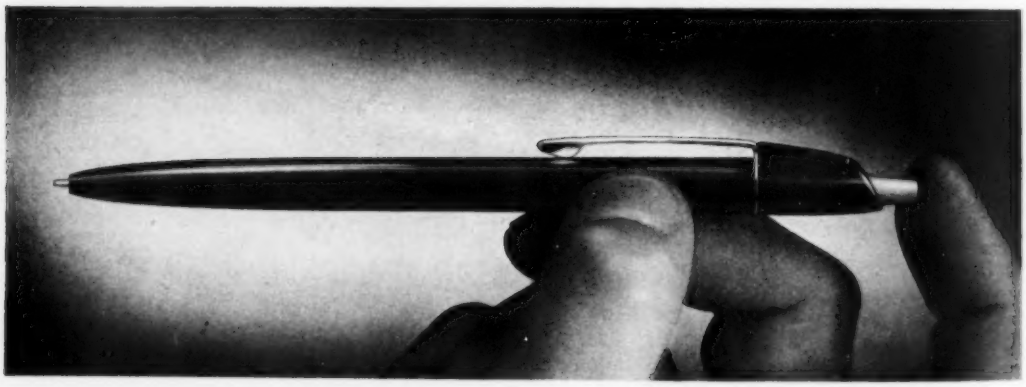
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How they Expanded When Trade was Slack



Even the space above a machine drive has been used for storage

by G. R. Lampton

WHAT SHOULD YOU DO when the market for your product is stagnant or in temporary recession? Should you put on a special sales campaign to try and catch a bigger share of the market? Should you cut your prices, or improve your product? Or should you do nothing extraordinary and just wait for the tide to turn?

The last solution can be ruled out immediately. If you wait, some of your competitors may not. Nobody can afford to wait today.

The answer to this problem, decided on by H. R. Danford and Sons Ltd., paper merchants and converters of Epworth Street, London, E.C., was to cut overheads and spend the money saved on improving the wrappings of their products.

They ruled out a special sales campaign, because it would have been far too costly for the results that might have been expected. In the current slackness of the paper industry, any attempt to swim against the tide would have been extremely uneconomic.

Hence the decision to examine overheads, the item so often overlooked. The firm has in fact made savings on overheads equivalent to 1½ per cent of sales, largely by consolidating two factories into one and saving 40 per cent of the factory floorspace without loss of output.

The money saved has not been used to cut prices, for the very marginal cut that could result, would have had virtually no effect on sales. If anything, it might have suggested that the product had deteriorated in quality, and so reduced sales. Much better, it was decided, would be an improvement in the appearance of the company's products, as sold over the counter by stationers. Cellophane wrappings and striking, modern designs of packs are now adding considerably to sales. And these extras have cost no more than the money saved on overheads.

Factory floorspace was saved in a number of ways*.

1. Certain old machines were scrapped and replaced with modern ones which took up less floorspace for greater output. For example, five old guillotines have been replaced by two modern ones.

2. The company works a two-shift system, to obtain more output from the same machinery. In spite of higher rates paid to shift workers, this is well worth doing. And the employees like it. There is a waiting list of applicants for night-shift jobs.

3. Work benches along the wall have had slotted angle shelves fitted above them, for extra storage of materials needed close to hand.

4. Vertical trolleys made from slotted angle, and containing several trays, are used to increase the quantity of material in the "pipeline" between machines that have been placed quite close to each other.

5. Even the space above the drive of a machine is used for storage, again by building shelves of slotted angle.

6. A hand guillotine that is only occasionally needed, but had formerly stood in its own floorspace, was fitted underneath a bench, where it can be reached, when required, by stooping. It works just as well in that position.

7. Large doors which opened inwards and wasted a lot of entrance space, have been converted into sliding doors. *END*

* An article on how Danford have saved on office space appeared in the July, 1957 issue of BUSINESS (page 100).

MANAGEMENT AT WORK

IDEAS AND ACTIONS OF PROGRESSIVE FIRMS

How to boost employee savings

A 'premium' idea has been used by Stewarts and Lloyds Ltd. for some years to boost works savings. At the end of every quarter, secretaries of the savings groups in the firm send a list of their members to head office, showing how many savings certificates each one has bought during the period in question. Head office allots a ballot number to each certificate. There are usually about 35,000 in each draw.

The draw itself is carried out by five juniors, supervised by the deputy secretary of the company and other officials. The juniors sit at a table. In front of each one is a box containing numbered dice. To draw a winning number, the juniors blindly grab a dice from their box and place it in a rack in front of them. The first junior only has four dice numbered from 0-3, so that no number higher than 39,999 can be constructed.

Each quarter 34 numbers are drawn and £300 worth of prize money—in certificates, of course—is distributed. First prize consists of 100 15s. certificates, second prize of 50. Then come two prizes of 25, ten of 10, and 20 of five certificates each.

The company's employees have increased their savings by about 5 per cent each year for six years. In 1957 the savings groups numbered 3,917 members. Between them they purchased £107,800 worth of certificates.

Generous sick scheme for hourly-paid workers

EMPLOYEES who have been with Hoover Ltd for five years or more now get 75 per cent of their normal earnings paid by the company when they fall sick. This is the result of an adjustment in the firm's three-year-old benefit scheme.

Originally, sick pay was dealt with only by the contributory club run by employees themselves. Members pay either 1s. or 2s. a week, and when sick get 30s. or 60s. a week from the club, according to their contribution. Should the illness continue for longer than 26 weeks, the club's payments are halved.

Three years ago, the company said they would equal a one-share payment (30s.) for all employees, irrespective of whether they belonged to the club or not.

Now this original scale has been doubled for employees who have been with the company between 6 months and 5 years, so that for the first 26 weeks of an illness an employee would get £3 a week from the company, as well as £1 10s. or £3 from the club (if a member) and National Insurance benefits.

But for employees with more than 5 years' service (and this covers over 50 per cent of the Hoover payroll) the company are paying three-quarters of an employee's normal earnings, less the National Insurance benefit. This concession covers only the first six weeks of an illness. Thereafter the company's payment reverts to the £3 scale for a further 20 weeks, and for the next 26 weeks to £1 10s.

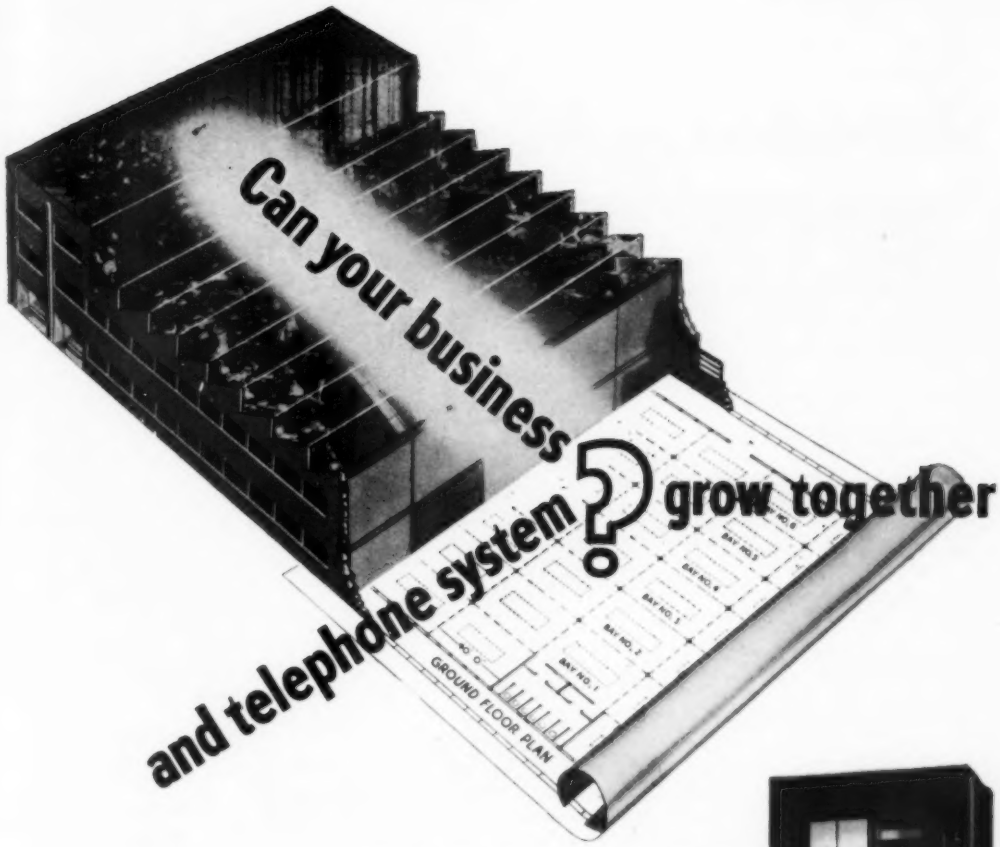
The company point out that the six-week period covers more than 90 per cent of all sickness absences.

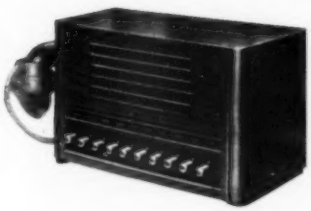
Insulation saves them 20 per cent on fuel

DRAUGHTY shed-type factory buildings are by no means hopeless from the insulation point of view. The Bristol Aeroplane Co. Ltd. carried out a partial insulation job on one such building two years ago, and it has paid them handsomely.

The building, 540ft. by 360ft., is divided into 18 bays of 30ft. span each, roofed as the picture shows. Heating is by steam from two oil-fired boilers. To improve







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STATELY HOME BECOMES STAFF COLLEGE

Georgian Manor House at Stoke D'Abernon, Surrey, has been bought by Richard Thomas and Baldwins Ltd. and is now being used as their staff college. There is room for about 24 resident students. All sorts of courses will be run there, ranging from top management seminars to junior foreman development courses.

The company have spent about £40,000 on this venture. They explain: "It provides the imponderables of tradition, history, proportion and beauty. Its setting in an unspoilt part of Surrey brings to students the peace and spaciousness essential to concentrated study."

insulation, the non-glazed parts of the roof were lined with ½in. gypsum plasterboard laminated with aluminium foil.

Results were dramatic: before insulation, oil consumption had averaged 9,510 gallons a week; after insulation, the average fell to 7,574 gallons—a saving of over 20 per cent.

Annual figures, previous consumption had been 247,284 gallons. After insulation it was only 196,255 gallons. The difference—51,029 gallons—represents a cash saving of nearly £3,000 for each heating period.

Slick humour helps their salesmen

AMERICAN Cyanamid Co. were having trouble breaking into a competitor's market, and salesmen were just not getting to see their prospects. So, according to *Printer's Ink*, their sales promotion department started sending out teaser mail shots bearing such sardonic slogans as:

- Be reasonable—do it *my* way.
- If at first you don't succeed—forget it.
- Doing nothing is hard work—you can't stop to think.
- My mind is made up—don't confuse me with facts.

Executives were intrigued by this approach and thousands of them asked for the literature which the mail shot offered. Cyanamid salesmen promptly delivered it—in person!

Works luncheon marks accident-free year

LAST year there were no lost-time accidents at the Birmingham factories of Alfred Bird and Sons Ltd., where just under 1,000 people are employed. To celebrate this achievement the management closed down the works for an afternoon in January, and gave a mammoth luncheon for as many of their employees as could come—over 600. Slogan for the occasion: Let's Do It Again.

The year's results are themselves no accident, but the reward of a vigorous safety programme pursued over a period of time. The firm's lost-time accident rate has steadily decreased over the years: 31 hours lost in 1954; 14 in 1955; 5 in 1956; and none at all in 1957. Here are some of the steps that have been taken:

Safety training is given to all employees when they join the firm. This consists of one hour's intensive instruction and is based on a pattern worked out by Birds' American parent, General Foods Corp. Refresher courses are held from time to time, generally at intervals of between 12 and 18 months.

The management emphasize that safety is a supervisory responsibility, and all supervisors get an initial three-hour course of instruction, followed by annual refresher courses.

Publicity includes the mailing of a monthly safety message to employees' homes. Typical one was a card sent last autumn with the message: 'Only 60 more safe days to Christmas!' A picture of Father Christmas shows him saying: "Safety's the best gift of all!" Other gim-

"What a Beauty"



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Office Facelift

Before-and-after pictures show how gloom was dispelled at the London offices of the Agent-General for British Columbia. Old-fashioned partitions (left) came out; marble floor and leather upholstery were replaced by fitted carpets and inviting furniture; new lighting and lowered ceiling brightened reception area. Other work included cedar panelling to cloak a wrought-iron lift shaft and marble balustrades.

Total cost was £4,000. This covers redecoration and refurnishing of reception area and general office. The work was carried out by Edgleys Ltd., London E.C.4.

micks have included Easter eggs, Valentines and 'safety' razor blades. Say the management: "This way we get more attention than if the messages were included in pay packets or handed round the works."

Other publicity methods are also used. Three safety 'Totem Poles' are located in the works. These are a series of globes placed one on top of the other, painted with a face, and each bearing the name of a department or section. When an accident occurs, a pink blush illuminates the 'face' concerned.

Safety **posters** are changed every month. They are displayed everywhere *except* in the working areas themselves. The firm believe that employees become too used to the posters if they see them constantly while they work.

A **'safety' inspection group'** has taken over the former safety committee's executive functions. It consists of six people—different ones each month—drawn from all departments and all levels of the firm. Their task is to inspect the whole factory and office area at least once during their tour of duty, and to make specific recommendations. Where possible, these are implemented on the spot by the supervisor concerned. Only major points are passed to management for action. The inspection group also check that the previous month's recommendations are being carried out.

All employees get a safety booklet issued to them which highlights in simple, graphic terms the unsafe acts and conditions that are chiefly responsible for industrial mishaps.

New B.S. gives check-list for conveyors

EASIER replacement of conveyor parts and greater interchangeability of components should result from publication of a recent British Standard: **Troughed Belt Conveyors** (B.S. 2890).

The main sections of this 40-page standard specify important dimensions, and recommend limiting dimensions for the principal mechanical parts.

Inevitably the installation of a conveyor requires the checking of many safety precautions which the equipment must incorporate. Here two of the standard's appendices will be helpful.

One lists 28 items of information which the purchaser should supply to the manufacturer. The other gives 18 items on which the manufacturer should inform the purchaser. Another appendix lists the titles of eight statutory provisions affecting conveyors.

BUSINESS BOOKSHELF

STANDARD BATCH CONTROL by J. L. Burbidge (Macdonald and Evans) 35s. net, 36s. 6d. post paid. The title of this book is quite misleading, but the author has clearly taken a risk that it would be so, in order to coin and give impetus to a name for a new type of production control. By the term 'standard batch control' he does not mean batch production control by standard techniques. He means production control on an assembly line that has components made in standard batches. He argues that it is a mistake to have each component made in the most economic individual batch, and then try to marry up batches of different sizes through a system of stock and production control. The result is unnecessary stores and an inability to tie the production control system to any system of budget forecasting.

Mr. Burbidge argues that it is more economic to have every component made in the same size of batch, and treat all these goods as work in progress, eliminating the need for stores. The standard batch size is based directly on the size or flow of orders for the finished product, and is in no way related to the most economic order size for any particular component.

The case for this new method is argued convincingly, but clearly each manufacturer to whom it could apply would have to make his own decision, in the light of circumstances, as to whether he would find it economic.

UTILIZING WORLD ABUNDANCE by L. St. Clare Grondona (Allen and Unwin) 21s. net, 22s. post paid. A plea for a public corporation which would build up reserves of primary commodities, establishing minimum and maximum prices for them. But this scheme does not seem to have solved the problems run up against by all existing price stabilization schemes.

ENGINEERING INSURANCE, by R. H. Procter (Pitman) 30s. net, 31s. 2d. post paid. Issued under the authority of the Chartered Insurance Institute, this is the first text to elucidate the principles and practice of this special insurance field.

PITMAN'S COMMERCIAL LAW, by John Nevin (Pitman) 12s. 6d. net, 13s. 4d. post paid. Fourteenth edition of a standard student text.

INTERVIEW CASE STUDIES by J. Munro Fraser (Macdonald and Evans) 18s. net, 19s. post paid. This is one of the most revealing books yet written on the art of interviewing job applicants and candidates for promotion. Fourteen verbatim, anonymous case histories of interviews are given, and the author also presents his system of five-fold grading. He emphasizes the ease with which an interviewer may be misled if he concentrates too much on trying to gain some indication of the candidates' future prospects and likelihood of fitting well into the vacant post. It is, he believes, much more important to get the candidate to talk freely about his past achievements, if any, and talk in such a way that he is not continually aware of the need to dress up his facts for the interviewer.

Mr. Munro Fraser gives as an example of the folly of being impressed about future prospects of the candidate, the case of Horatio Bottomley. So many important people were taken in by him, people who could not have been deceived if they had taken the elementary precaution to check up on his past. The best guide to a candidate's future, though by no means an infallible guide, is his past achievements, in whatever field.

A SHORT GUIDE TO PUBLIC SPEAKING, by R. S. Lawrence (Windmill Press) 9s. 6d. net, 10s. 1d. post paid. Specially written by a well-known teacher of public speaking (and former contributor to BUSINESS) who has designed the book as the substance of a year's work in evening classes. It covers speech and voice production as well as the subject matter of a speech, its preparation and delivery.

SOME BRITISH INDUSTRIES — THEIR EXPANSION AND ACHIEVEMENTS by Alan Hess (Information in Industry) 42s. net, 44s. post paid. The stories of the 200 companies sponsored by the Whitehead Industrial Trust during the period 1936-56.

FACTORY AND MANAGER IN THE U.S.S.R. by J. S. Berliner (Oxford University Press) 60s. net, 61s. 9d. post paid. The author, an American university lecturer, has made an extensive study of Russian literature and held long anonymous interviews with former Soviet managers who have escaped to the West. He has put together a most readable account of the subterfuges and tricks that Russian factory managers have to indulge in, in order to fill or overfill their allotted production targets in spite of being handicapped by shortage of materials.

BETTER BUSINESS COMMUNICATION by Dennis Murphy (McGraw-Hill) 34s. net, 35s. 6d. post paid. Full of rather off-putting illustrations and useful but sometimes superficial pieces of advice on how to get on with other people and make your point, in either written or spoken communication, under a wide variety of circumstances.

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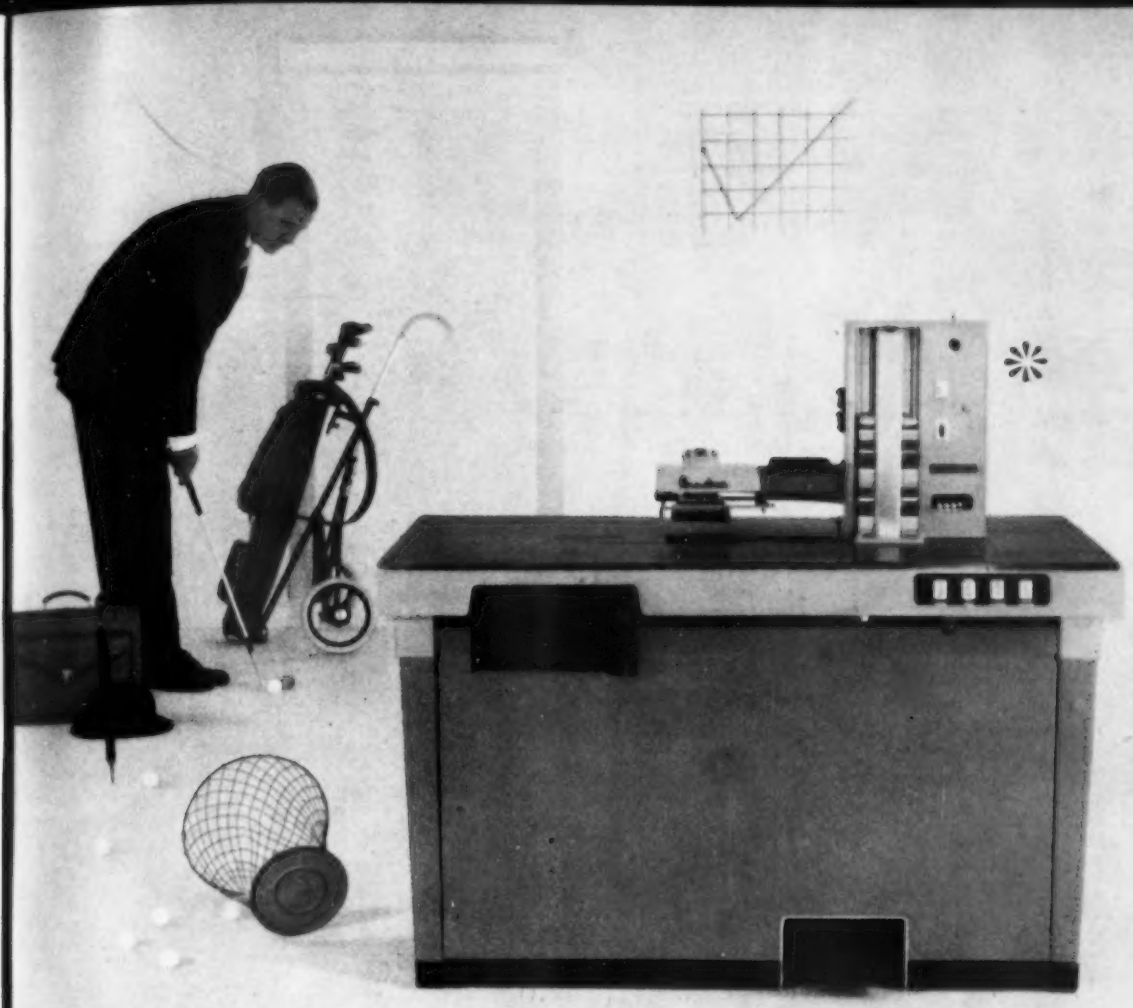
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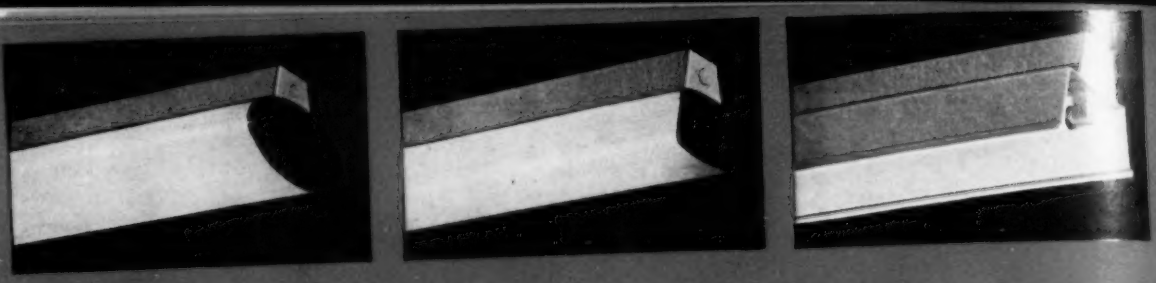
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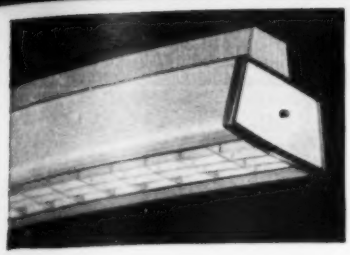
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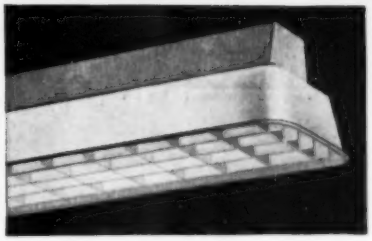
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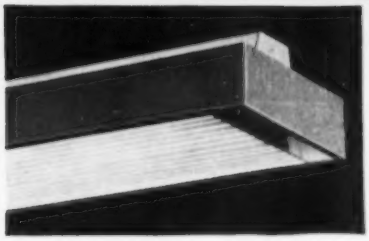


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Three-point Plan Gives Better Supervisors

- Continuous training
- Clearly defined authority levels
- Salary administration

by George T. Rae

DURING the past few years Johnson and Johnson (Great Britain) Ltd. have achieved three things at their Wrexham Personal Products factory: a considerable increase in output per employee, a big reduction in labour turnover, and a consistent improvement in management-employee relations.

Their success is largely the result of better supervision, especially at the middle and lower levels. This has been developed by:

1—Systematic training.

2—The institution of 'authority ratings', which help to define the lines of command and responsibility.

3—A system of salary administration which includes job evaluation and personal merit rating.

Training

Johnsons believe that the first step in developing supervisors is to impress on them that they are regarded as very important people. Therefore all supervisory grades play an important part in the system of weekly conferences which provide a two-way channel of communication between boardroom and shopfloor.

The conferences last between one and two hours and are usually held at 10.30 a.m. On Mondays, senior executives and departmental superintendents get together; on Tuesdays, departmental superintendents and foremen; on Wednesdays, foremen and group leaders (or chargehands). For group leaders and ordinary employees there is a series of meetings, staggered to avoid too much interference with production, on Thursdays.

The conference system does more than ensure good communications. It also has an educational value, giving supervisors and employees an insight into the company's broader problems.

From time to time there are training and development courses for group leaders. Talks on a variety of subjects are given by senior executives, including the works director and the personnel manager. The courses last for a week or more, but group leaders attend them in relays, so that production is not unduly affected.

The basic course is on the art of running meetings—for this, the management believe, does much to ensure good results from the weekly conference system. Included in the programme are such things as: how to open with a cordial greeting; stating

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The basic course is on the art of running meetings—for this, the management believe, does much to ensure good results from the weekly conference system. Included in the programme are such things as: how to open with a cordial greeting; stating

the objectives of the meeting; planning the main discussion; drawing up a timetable for each discussion point; having ready all relevant material (papers, figures, etc.); arranging seats so that everyone can see and hear; avoiding arguments; preventing one speaker from monopolizing the discussion; and, finally, summarizing the discussion. This sort of information is obviously of great value to group leaders who have not had much experience of conference methods.

Advanced courses, for more experienced group leaders, make use of case-studies. These cover such subjects as: how to apply and recognize initiative; how to build confidence in employees; how to avoid the dangers of over-supervision; and how to correct employees without arousing resentment.

The group leader courses are also attended by employees who have shown promise and may be considered for promotion. Some of the material is above their heads, but their reactions and questions help the management to assess their potentialities.



Employees sit in on the committee that evaluates their jobs. They can also ask for colleagues to be present. Agreement must be reached before the assessment is official

Authority Levels

Every member of the organization from the managing director to the most junior supervisor has an authority rating, ranging from one to 19. This system greatly facilitates the proper delegation of responsibility.

According to his rating, a supervisor may be able to:

—Authorize or recommend a pay increase for his workers without reference to higher authority.

—Recommend employees for promotion.

—Give leave of absence.

—Spend up to a certain limit on improving production.

A departmental foreman, for example, has a rating of 13; can authorize a pay increase for an assistant group leader, or recommend one for grades up to shift foreman; can spend up to £9 on anything which he thinks may help production; and can authorize two weeks' leave with pay for any employee under his control. Lower down the scale, a group leader has a rating of 17; can recommend a pay increase for an assistant group leader; spend up to £5; and give two days' leave with pay.

The delegation of authority is taken very seriously. For instance, the works director cannot walk into a department and tell an empolyee to tidy the floor. His order must go through the proper channel, which is the employee's immediate supervisor.

Salary Administration

This has had an excellent effect on morale. Supervisors feel that the existence of a 'system' does much to ensure that initiative and efficiency are rewarded fairly.

Individual jobs are evaluated by allocating points under these headings: Experience (by far the most important); education; confidential information handled; complexity of duties performed; mental effort required; nature of supervising work; number of contacts with others inside or outside the factory; accuracy; supervision received; visual concentration; working conditions; and scope of supervision.

An unusual feature of the system is that the individual can be judge and jury at the assessment of his own job. He sits on the evaluation committee. He can ask for two colleagues to join it. And agreement must be reached before the assessment is made official.

From the assessments, job specifications are drawn up, and salary scales allotted. Promotion is strictly according to merit. Everyone knows exactly how much he can earn without being promoted. Individual pay increases are based on increased ability to meet the job specification.

As an aid to determining merit increases, a system of periodical reviews has been instituted. These are made by the immediate supervisor of the person concerned. Points are awarded according to merit under three headings:

Personality—Appearance, including dress, manner, neatness. Ability to get on with others. Courtesy, tact.

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Their new £2,000 accounting system is not only cutting delays and increasing accuracy—it will soon have paid for itself in labour savings



The system itself has hardly changed. But now the machine does most of the brainwork. Only delivery note summaries are still handwritten.

Small Firm Finds that Mechanized Billing Pays

by George Hamilton

SMALL firms with under 100 employees tend to fight shy of expensive accounting machines. Instinctively they feel that spending between £1,000 and £2,000 for equipment cannot be worthwhile. Expert opinion may well come to the same conclusion—but not necessarily so.

In the case of Blackmore Fashion Co. Ltd., Bletchley, office experts actually said it was a borderline case—possibly but not definitely justifying a large machine. But when the company bravely took the plunge, and spent nearly £2,000 on a new posting and invoicing system, results soon proved that they had made an excellent investment. Five employees are now free for other duties half of the time. Invoices go out on time even at peak periods, and savings will have paid for the installation well within two years.

Blackmore's Bletchley factory employs 70 people and produces paper patterns for home dress-making. The company have about 5,000 retail accounts to look after, of which some 2,500 are generally active each month. Active accounts get monthly invoices and quarterly statements. Inactive accounts get half-yearly 'nil' statements.

The work can be classified as follows:

Debit postings. Delivery notes stating number and type of patterns dispatched to a particular account are summarized on a slip of ordinary paper to show how many patterns in each price category were sent. Invoices are worked out from delivery notes, and details are posted to sales journal, sales ledger and customer's account card.

Credit postings. As cash is received, the cash journal is brought up to date, and customer's account card is credited.

Quarterly statements.

The old system consisted of six account clerks doing their jobs by hand, mainly on a multiple-writing peg-board arrangement. Main time-consumer was the calculation of invoice extensions, which they did with the aid of ready reckoners.

Peak Delays

Invoicing generally started during the first week of each month, but rarely finished before the third week and at peak times (spring and autumn) frequently overran into next month. It was not unknown for two months' invoices to be sent out together when the situation threatened to get out of hand.

This happened especially when a peak month coincided with the end of a quarter; in other words when, after monthly invoices had gone out, every account had also to receive a statement.

A year ago things had got to the point where an extra clerk—possibly several—would have been needed to cope with the increasing work. It was then that the company wondered whether they should not mechanize instead.

A wide range of calculating and accounting machines were inspected, but none seemed to do all the jobs that were required of it. The trouble with most accounting machines was that they only multiplied in decimals, which meant that much of the onus of sterling extensions would remain with the clerks.

One machine, however, seemed to be ideal—a semi-automatic electric model which has recently been equipped to multiply sterling, down to farthings, and which can take up to four mechanical 'programmes'. At the turn of a knob it is set to do one of four pre-determined tasks. Thus, one programme can be devoted to credit postings, one to debit postings, one to cash analysis and one to payroll. An in-built safety device ensures that incorrect pick-up cannot go unnoticed—it stops the carriage opening.

The decision to use this machine at first seemed like taking a steamroller to crack a nut. But experience has shown that even a steamroller can be economical.

New system built round this machine closely resembles the old, but cuts out nearly all manual writing and calculating. Delivery notes are still summarized by hand on slips of paper. The machine does the rest.

In one operation it makes out the invoice, calculating extensions as it goes along, then automatically fills in statement card and sales ledger card. All its operations are recorded by carbon on a control sheet.

The machine stores the amount of each invoice and throws out a total at the end of each run. This had previously taken a lot of time, had often been shelved altogether at busy periods, and had been a source of constant errors.

The 'programme' for quarterly statements is, of course, the same as that for debit postings, and presents no difficulty.

Automatic Posting

At the end of each run, total debits and credits are automatically posted to a control account. From this it is easy to extract information such as 'total balances outstanding', 'value of patterns invoiced', etc. Consequently, the machine is giving management sales analysis figures and check figures that were previously hard to come by or simply unobtainable.

Cash analysis is also speedier and more accurate by machine, and again means that clerks no longer have to make calculations themselves.

The payroll 'programme' is not used at the moment, as experience has shown that for a staff of 70 the work can be done rather more simply by the existing hand-written method.

Machine utilization is only about 60 per cent. Even so, there can be no doubt that the job it is doing in this firm is worthwhile. Here are some results:

- Instead of more staff having to be taken on, there is now a theoretical surplus of one and a half clerks. (In practice no one has been sacked, as an insurance against busy periods and staff turnover.)

- Five of the six clerks can now spend two weeks out of four doing other jobs in the department—jobs which were previously done in a rush or not at all.

- Most months, invoices now get sent out by the end of the second week. In spite of machine breakdowns, teething troubles etc., they have seldom been later than the third week. Quarterly statements, too, are promptly dispatched.

- Considerable savings in stationery costs are now possible. Before, special perforated stationery had to be bought from manufacturers of multiple-writing equipment. Now Blackmore print their own.

- Proper sales analysis is now possible. The machine automatically notes how many actual patterns have been sold each month. Previously, it was a major task to get at this figure, and generally only a cash total was used as a sales control.

- Automatic proofing and numerous check-points have largely eliminated invoice and statement errors.

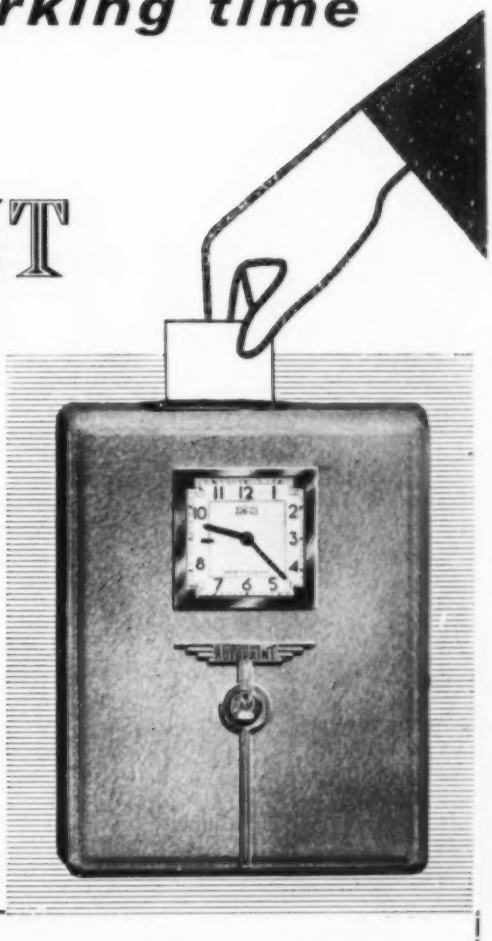
- Cash credit postings that used to take a skilled clerk one and a half days are now done on the machine in three hours.

END

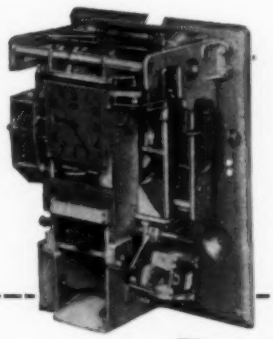
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How Work Study Helps a Process Firm

by Keith Underwood

Cutting labour costs is not the main target. Generally it is better to concentrate on using plant and material more economically

IN principle work study is universal, but in practice it has to be modified to suit different types of business.

A process firm cannot use exactly the same techniques as a light engineering firm; at least it cannot use them in exactly the same way. There has to be less emphasis on studying operations individually, more emphasis on tracking down the causes of waste and inefficiency. Often it is found that the methods of one manufacturing section are improved by changing the methods of another section, although these, in themselves, appear satisfactory.

T. Wall and Sons Ltd. have made considerable improvements by setting up production study units at five of their six factories. Now in its fourth year, their project differs from the usual run of 'engineering type' work study because

—Labour costs are a comparatively small percentage of total costs. (In one case described later—big savings were made by *increasing* the labour costs of a product.) This means that the production study units are largely concerned with the use of plant and material. Their work is not dominated by the top-heavy requirements of an incentive bonus system.

—Quality standards, based on subjective assessments of taste, colour, appearance, etc., are inclined to 'drift.' Often it is difficult to apply controls without making impossible demands on supervision.

The Set-up

There are three manufacturing companies in the group: T. Wall and Sons (Ice Cream) Ltd., T. Wall and Sons (Meat Products) Ltd., and T. Wall and Sons (Handy Foods) Ltd.

The group has retained some of the characteristics of the family business from which it has grown. Local pride is strong; works managers like to feel that they 'run their own show.' This has influenced the development of the work study project.

The board have introduced production study by giving each factory a team of specialists who report direct to the factory manager. Any other organizational plan, they believe, would have created the wrong atmosphere. Local management might feel that an 'investiga-

tion' was in progress, rather than an internal effort to increase the efficiency of an already efficient unit.

Throughout the aim has been to present the project as a 'combined op'; to convince departmental heads and supervisors that it was up to them to make use of a new management service.

Selling the Idea

The project was launched at the meat-products factory in London, and great pains were taken to ensure that all employees understood its purpose. In small groups departmental managers, supervisors, chargehands, shop stewards and works committee managers were given a one-week appreciation course which included:

—An introductory talk by the site manager.

—A talk by the company personnel manager, explaining the unions' attitude to work study.

—Talks by works managers of other companies which have used production study (to convince any doubters that its application was both painless and profitable).

—Films and demonstrations.

Each course consisted of five two-hour sessions; thus two courses could be run in the same week, one in the mornings and the other in the afternoons.

Working Methods

When the first unit had won its spurs, Wall's began to set up units at their other factories, followed by one concerned exclusively with ice-cream marketing activities.

Each unit is virtually self-contained. Its members—between two and six in number—are directly responsible to the works manager. He co-operates with the local production study manager in drawing up a programme. Nothing is investigated without his consent, and the findings are always reported to him in the first place.

Before an investigation begins, its purpose is explained to the operators by the manager of the department in which it is to be made. He also introduces the production study men who will be doing it.

As the work progresses, the production study men take pains to explain their activities to the employees concerned; where possible, they also indicate the way in which the investigation is moving. But the main reporting is to the management. It is *their* responsibility to answer comments or criticism, and the production study team carefully avoid anything which might short-cut the proper lines of authority.

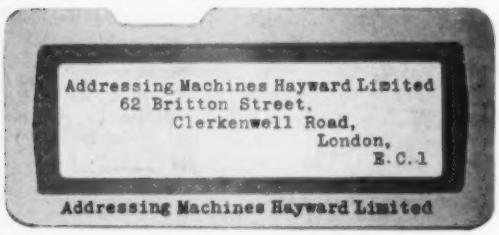
At the end of the investigation, the results are discussed with the factory management. The aim is that the final report should take the form of joint recommendations.

Co-ordination

The activities of the different units are co-ordinated by a production study manager at H.Q. His functions are:

1—To see that they are properly staffed.

2—To persuade works managers to



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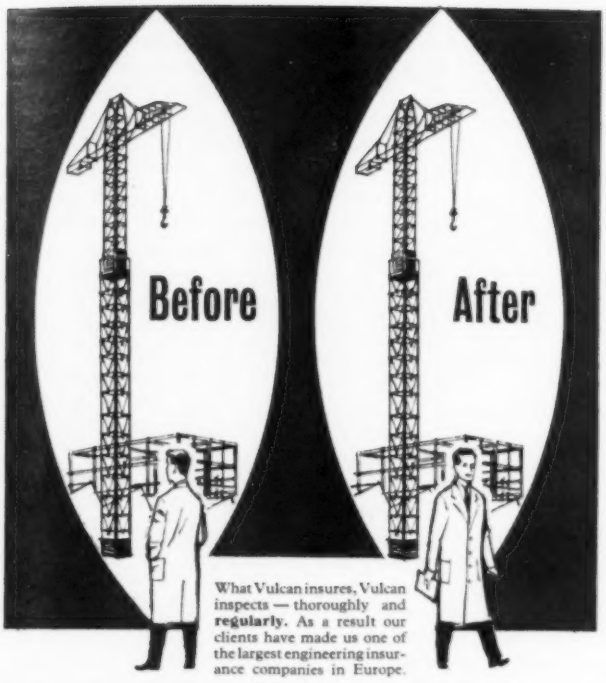
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make full use of production study.

3—To avoid the unnecessary duplication of effort which would result if two units embarked on similar investigations.

4—To ensure that all members of the units are informed of the latest developments in production study methods.

Close liasion is achieved by a system of production study committees. Monthly meetings are held at each factory. The permanent committee members are the production director and the H.Q. production study manager; they are joined at each local meeting by the works manager, the local production study manager, and any other executives who are closely concerned with current investigations. Minutes are sent to all P.S. units.

Every fortnight, the production study manager reports to his chairman. This is an informal arrangement and no action is taken on his reports.

Results

The project as a whole is now gathering momentum. Wall's have found that it takes between 12 and 18 months for a unit to establish itself, win the full support of production staff, convince the sceptics that there are no 'rockets' at the end of an investigation, and produce something in the way of cash savings.

The examples given below illustrate some of the principles of work study in a process firm.

EXAMPLE 1 concerns the production of sausages at the London factory of T. Wall and Sons (Meat Products) Ltd. Briefly, the method is that 'choppings' of sausage meat are extruded into skins by mechanical fillers. Because the skins are animal products, their sizes vary tremendously; therefore the task of dividing them into one pound weights involves careful weighing. Individual lengths are passed to 'bundlers,' who twist them into sausage links, and are then wrapped by other girls.

The reason for the investigation was that there appeared to be some 'out of balance' between the work-content of different operations. To remedy this, the management thought, would reduce labour costs. In fact, the project took an unexpected turn.

The set-up involved a number of small work stations, each staffed by a filling machine operator, a weigher, and several bundlers and wrappers. The composition of the teams had been fixed in the dim past, and was still thought to be satisfactory. But a pilot study disclosed that the weighers were having difficulty in keeping the other members of their teams fully occupied.

An obvious remedy was to rearrange the work stations and reduce the numbers of bundlers and wrappers. But the production study team disdained the obvious and decided to make a more detailed investigation.

They began with a quality check. This confirmed that the weighing

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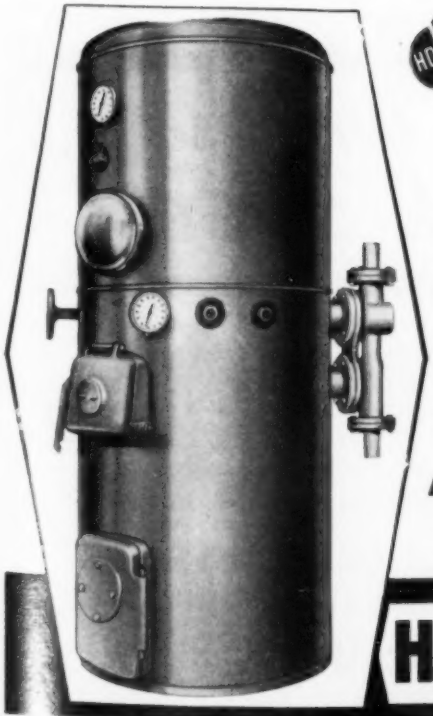
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operation was the main culprit, but also revealed that accuracy as well as speed was at fault. Most of the 'one-pound' packs of sausage leaving the factory were considerably overweight.

Naturally the management had laid down a safety margin, to offset shrinkage and rule out the possibility of a customer receiving an underweight pack. But in practice their 'generosity' was greater than they imagined. Because of inconsistency in weighing (and the natural tendency of the weighing machine operators to err on the safe side) many packs were well above the prescribed level. The excess averaged only two or three per unit, but when this was applied to the department's huge output, it meant that in one year Wall's were giving away sausage meat worth tens of thousands of pounds.

The weighing operation and the weighing equipment were then studied. This revealed other weaknesses. One of them was that the department was using nine different types of weighing machine—the result of rapid expansion during the immediate post-war period, when new equipment was difficult to obtain. Because of this lack of standardization, it was very difficult to switch weighing machine operators from one work station to another. An additional weakness was that the filling machines were not being used to their full capacity.

When all the evidence, statistical and otherwise, had been assembled, the production study team was able to recommend a comprehensive solution to the problem. This involved:

—**Changes in the work stations.** The number of girls in each was increased—and so was the ratio of weighers to bundlers and wrappers.

—**Standardization** of the type of weighing machine which permitted the most accurate reading.

—**Systematic training** of weighing machine operators, to show them how to achieve reasonable speed without sacrificing accuracy. (In the past it had been assumed that such a straightforward operation needed only a very brief period of instruction).

Results: More samples were taken after the changes had been made. These revealed that the consistency of the weighing operation had improved considerably. Excessive overweight had been eliminated; at the same time there was, if anything, even less chance than before of an occasional pack dropping below the prescribed safe level.

Output per operator from the rearranged work stations was slightly lower than before. But the corresponding rise in labour costs was more than offset by the smoothness with which the work was now being done. In any case, material costs (which represent a much larger percentage of total costs) were down, producing a big overall saving.

EXAMPLE 2 concerns 'boning'—the difficult operation of removing bones from the sides of pork which



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are turned into sausages and other products.

One reason for the investigation was that the boner's job involved a high degree of skill and judgment, attainable only after years of training. Another was that the management, faced with a steady rise in the demand for the company's meat products, were eager to explore all methods of increasing productivity.

The established procedure was that each side of pork was handled by one boner. This meant that the heavy sides had to be transported to individual work stations throughout the large department. After investigating the position, the production study unit recommended a policy of specialization.

From this principle an **entirely new lay-out** has been evolved. Now each side of pork is cut into joints by a group of operators immediately it is brought, by overhead conveyor, from the chilled room. A roller conveyor, running the full length of the department, then carries the joints to small teams of boners situated on either side of it.

Each team has about a dozen operators, who handle only one type of joint. The boning operations are divided between them, so that each specializes on one part of the complete job.

The new arrangement has several advantages:

—**Training (on the job) is much simpler.** In the past it took at least three years for an operator to achieve dexterity. Now it takes about three months.

—**Handling is much simpler.** Because the sides are cut up as soon as they enter the boning department, the company have been able to eliminate much of the original overhead conveyor system.

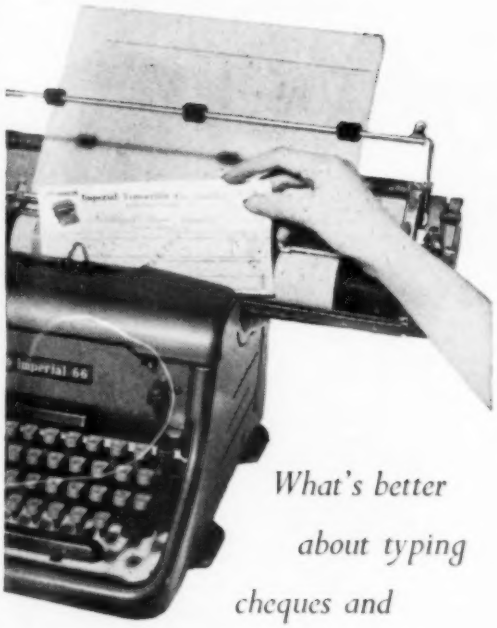
—**The chilled meat passes through the department much more quickly.** No longer is it necessary to maintain a small stock of sides behind each boner. For the consumer there is the advantage of a fresher product.

—**Cash incentives are possible.** Each team has its own quality controller. Group bonuses are based on the quantity and quality of the teams' output, standards having been set after a detailed analysis by the production study unit. Because of the specialization principle, an operator can earn top money after a short period of training. This is a big incentive, helping to increase productivity and reduce labour turnover.

To permit flexibility in arranging the teams, specialization is not applied too rigidly. But on-the-job training now takes place in controlled stages so that a boner masters one series of operations before he is asked to absorb more information.

Further developments are planned, for the aim is eventually to install a completely conveyorized system. In this way the production executives are building on the recommendations of the production study unit. Already their combined efforts have made possible a considerable increase in output from the same space. *END*





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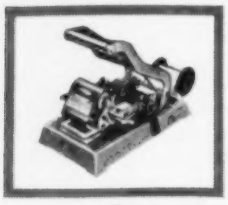
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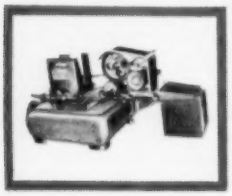
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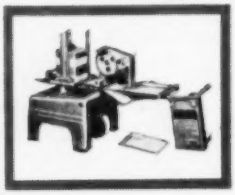
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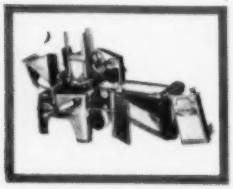
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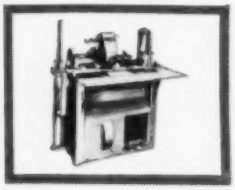
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N.25

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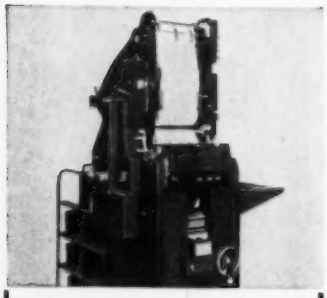


This Executive desk, for example, a superb piece. Its drawer front, legs and frame are in solid Sapele Mahogany and its top is a spacious 5′ by 2′ 9″, shaped and with a vynide panel. And, as with many other desks in the Esavian range, pedestals are available to fit the desk for any function. Beech and Light Alloy furniture are also covered in our folder "Furniture for the modern office". Write for a copy today.

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BUSINESS *Equipment Survey*

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Quick-change Shelving

NORMAL assembly time is cut by half, it is claimed, when using the *Klip Lok* shelving system. The all-steel components are available in a large variety of sizes and types; shelf height is quickly adjusted; and the finished unit is attractive in appearance.

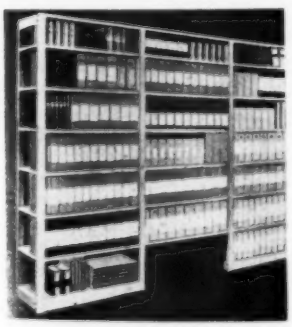
Skeleton of the system is formed by four extra-strong uprights, to which the top and bottom shelves are permanently bolted. Intermediate shelves are slotted and are dropped direct on to lugs pierced at intervals in the uprights.

The shelves can be used either way up to provide flat surfaces or trays. Standard bay width is 3ft., and bays may be assembled side by side or back to back. In either case, only one pair of uprights is required for each bay after the first.

Uprights are available in lengths from 4ft. to 10ft. Shelf depths range between 9in. and 24in. Among the accessories available are bin fronts, dividers, drawers, sloping shelves and index strips.

Components are stove-enamelled in hammer grey, white or apple green. Because there is no machining or drilling on front faces, the shelving is neat in appearance, and equally suitable for office, display or store-room use.

Storadvisers Ltd.,
223 Vauxhall Bridge Road,
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Adjustable shelves

Telephone Amplifier

WITH the *Speakeasy* telephone amplifier, the busy executive can make notes or search files while a call is in progress. The instrument also saves him the irritation of prolonged 'holding on' while waiting for a connection.



Saves executive time

Self-contained, the *Speakeasy* is housed in a neat box on which the telephone stands. After dialling or calling the operator in the normal way, the executive places the handset over the amplifier, with the earpiece on top and the mouthpiece facing into the front of the box.

Volume of incoming speech can be adjusted by a control like that used on a radio. Outgoing speech is heard as clearly at the far end as if the telephone were used in the normal way.

An additional advantage of using the amplifier is that other persons in the room can hear, and contribute to, the conversation if desired.

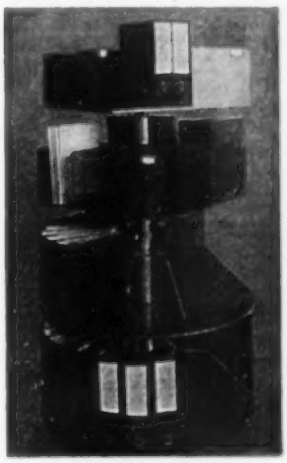
Because transistors and a printed circuit are used in its construction, the *Speakeasy* is small and light in weight. It is powered by a standard battery which lasts 12 to 18 months.

Fordham Pressings Ltd.,
Melbourne Works, Dudley Road,
Wolverhampton

Revolving File

A NEAT way of storing box and lever arch files is provided by a new *Shunic* device. Based on a 'unit' construction, this permits the user to have a single piece or to stack up to four one over the other. The units may be one of a kind or mixed, according to requirements, and revolve easily and independently round a central rod.

Each box file unit will hold up to 16 foolscap or quarto files; the circular lever-arch units will hold 24 files



'Unit' construction

★Equipment included in this survey is selected for its news value alone. Manufacturers are invited to submit details of *new* and interesting products for consideration. An original photograph should accompany each item submitted.

of either size. The basic unit may be stood on a table top. When others are to be added, a finishing cap is removed from over the central hole, and a rod inserted to support one, two or three extra units. Finish is in green stove-enamel.

Designed principally for the smaller business, these files are reasonably priced.

Shunic Ltd., 56 Wellington Road, London N.W.8

Portable Recorder

IN its attractive red and grey case, the *Saja* portable tape recorder measures 14in. by 11in. by 6in., and weighs 21lb. The reasonable price



Ninety minutes per tape

includes the microphone which packs neatly into a recess in the case.

Suitable for the recording of music or speech, the machine may be supplemented by optional attachments. These include a pickup for radiogram, a fitment for recording telephone conversations, a stethoscope or earphone and hand or foot control for transcription.

One tape takes 90 minutes' recording (45 minutes per track). A numbered counter provides a means of precision registration of tape position at any time. Tuning is done by a visual device.

All controls are operated from the microphone by push-buttons.

The machine is suitable for conference recording and can be used from the mains or, with an adaptor, in a car.

K. Harvey's Office Equipment Ltd., 33-34 New Bridge Street, London E.C.4

Typists' Copyholders

NEW models of *Eyeline* typists' copyholders include several useful improvements. Among them are



Reduces eyestrain

a detachable notebook clip which can be used as a rigid backboard while writing; and a lamp which may be fitted to either of the two models.

Copy, moved by turning a knob in earlier models, can now be controlled mechanically. An easy-to-use, adjustable control, operated by the palm or side of the hand, is placed alongside the typewriter. Copy moves beneath a transparent cursor which, while identifying the line being worked on, enables the typist to see what is coming.

The copyholders are made in two sizes: 9in. wide for standard use, 16in. wide to accommodate accounting documents or other large-size material. The lamp, which is an optional extra, is designed so that it can be used without interfering with the notebook clip. Prices of both models and of extras are reasonable.

Faunch Metal Forms, Hockliffe, Leighton Buzzard, Beds.

Electric Duplicator

THOUGH small in size (the base is about 12in. square), the *Renafix* spirit duplicator is electrically operated. Reasonably priced, it can nevertheless deliver copies at speeds of up to 100 per minute.



Small and fast

Maximum print area is 8¼in. by 13in. Up to 200 copies can be taken from one master and reproduced on paper varying in weight from airmail to light card. Though paper is fed by hand, registration is very accurate, the makers claim, thus making the machine suitable for duplicating on pre-printed forms.

Spirit is fed in by squeezing a plastic bottle which is fixed in an inverted position to the side of the machine. Because the bottle is translucent, the operator can see at a glance when it needs replenishing.

The *Renafix* has all the normal spirit duplicator features. Up to seven colours can be reproduced at one run through the machine; it will copy any written, drawn or typed material.

E. G. Solomon, 44 Worship Street, London E.C.2

High-speed Calculator

LATEST calculator in the Archimedes-Diehl range is the *Diehl DR*, a machine designed for speed and accuracy. Equally suitable for



Eighteen-column totalling

commercial or technical work, it has two registers with full tens transmission on each.

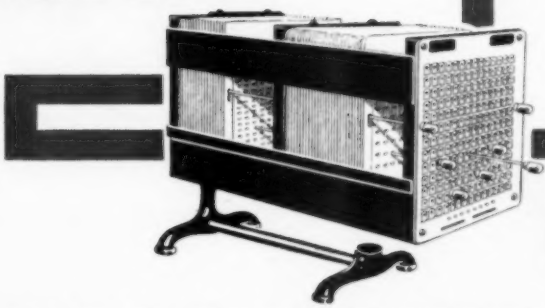
A special feature is the automatic transfer facility. This enables the operator to carry out continuous operations for any of the four mathematical functions (or a mixture of them) without re-setting.

Multiplication and division may be done automatically or semi-automatically. This means that a semi-skilled operator can work out sums by the 'fool-proof' push-button method; the more accomplished can work faster by using the semi-automatic action. During division by either method, divisor and dividend are aligned, whatever the position of the carriage.

Another useful feature—especially for the operator whose knowledge of

A CARD RECORD SYSTEM PLUS..

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"FINDEX"
PUNCHED CARD SYSTEM

The Hand Punched Card System designed specially for all problems of analysis, sorting, or classification.

Statistics obtained under as many headings as required in ONE operation and in a matter of minutes!

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Helmsman



TWIN TYPE STEEL CLOTHES LOCKERS
Patent No. 699842

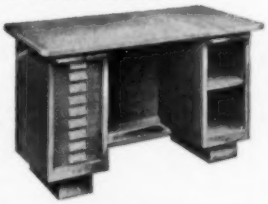
Each Twin Locker Unit provides separate accommodation for the clothing and personal belongings of two persons. Fitted with a modern streamlined SLIDEX Handle with 3-Point Latching, lockable with padlock, or Traditional 6-lever lock in lieu or in addition if required. Standard size 72in. x 15in. x 12in. deep. Wide choice of colours and other sizes.

LIST PRICE: **£4.15.0** (in nests of 3) per person. (**£9.10.0** per Twin Locker), 6-lever locks.
" " **£5.2.6** (in nests of 3) per person. (**£10.5.0** per Twin Locker). Slidex Handle.
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JOHN JEWKES, DAVID SAWERS and RICHARD STILLERMAN

A study of the causes and consequences of industrial innovation and, in particular, of the inventions of the nineteenth and twentieth centuries. Includes case histories. *Illustrated 31s 6d*

MACMILLAN

St. Martin's Street, W.C.2

arithmetic is shaky—is automatic decimal point placing. Before setting her sum, the operator decides how many decimal places are required in the result, and sets a pointer accordingly. When the result appears, it is automatically placed in correct relation to the pointer. This means that, even when the operator cannot anticipate the approximate result, she can be sure the decimal point is correctly placed.

Totalling capacity of the machine is 18 columns.

Archimedes-Diehl-Machine Co. Chandos House, Buckingham Gate, London S.W.1

Self-inking Stamp Pad

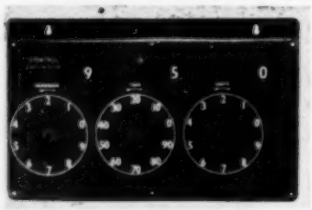
NO ink is required to replenish the *Istu* rubber stamp pad. The user keeps it moist by applying a few drops of water from time to time.

Made in Germany, the pad has recently become available in this country. Housed in a neat blue plastic case, it comes in five colours —red, green, violet, blue and black. After using a prototype of the pad for two years, the British distributors find it still working satsifactorily.

John Heath and Co. Ltd., 42-44 Holloway Road, Birmingham 1

For Counting Stock

A NEW hand-operated counting device is designed for keeping a numerical check on stock. Known as the *Stoktrol*, it consists of a small panel on which are mounted three telephone-type dials. Totals up to 999 appear in small windows at the top of the panel.



Works by subtraction

The device works by subtraction. The current total of items to be accounted for is set in the top dials. As stock is issued, the number of the items withdrawn is dialled, and the fresh total appears. The three dials are allocated to units, tens and hundreds respectively.

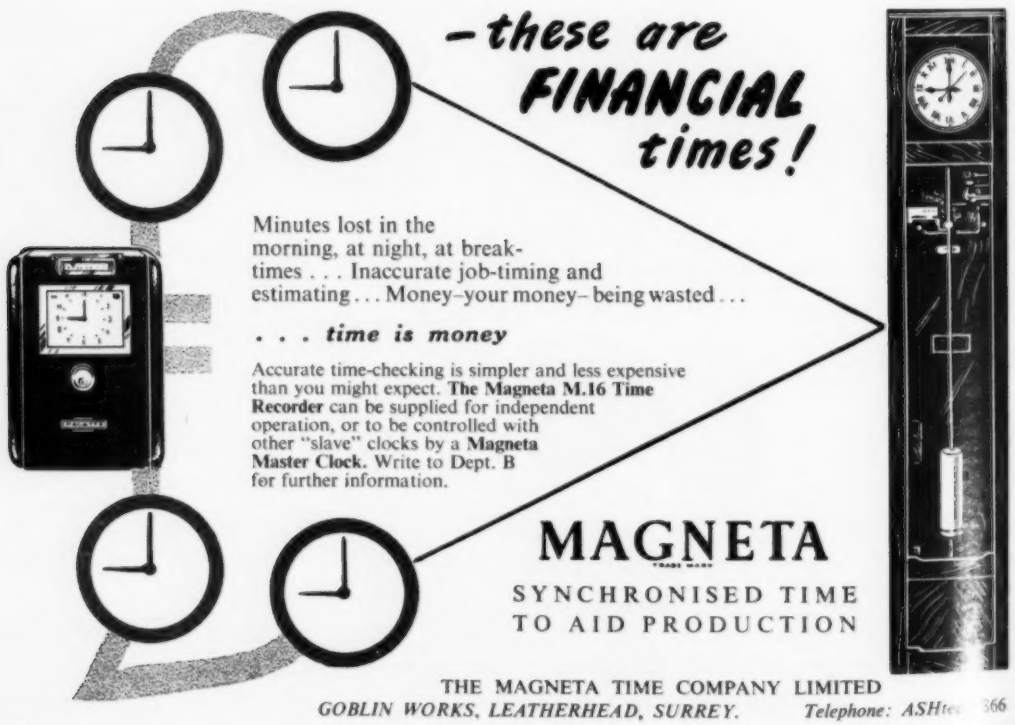
Dimensions of the panel are 17½in. by 11in. Other models are designed for larger totals; or to add instead of subtract.

K. Bisset & Co. Ltd., 145 Grand Buildings, Trafalgar Square, London W.C.2

New Listing Attachment

A new listing attachment for the *Bradma Buckingham* electric addressing machine considerably enlarges the scope of this equipment. The attachment can be used to make one-, two- or three-column lists from any permutation of lines on a series of multi-line address plates.

Suppose, for example, the user had a series of nine-line plates, and wished to make three-column lists in which





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A Fonadek on your desk ends the telephone menace. Slip your receiver (G.P.O. or internal) into the Fonadek 'cradle' and you are independent of the phone. Your hands are, *you* are free.

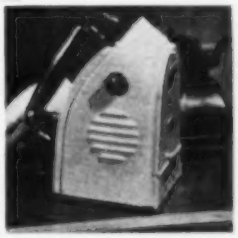
As soon as your caller comes through the Fonadek will clearly amplify his voice. You just talk normally. No picking up the phone again. No more holding on. You can look through files or take notes in the middle of a call. Fonadek frees you. Saves your time. Saves your nerves. Steps up your capacity.



Don't let the telephone give you 'phonomania'.

ANY NUMBER CAN JOIN IN

You are in New York. Yet you preside over a sales conference in London. It's so simple with a Fonadek. The assembled salesmen all hear you clearly. And each can speak to you. One Fonadek, that is all you need. No wonder famous firms and famous people all over the world consider Fonadek essential.



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82/58



Addressing machine attachment

lines 8, 2 and 5 appeared in columns 1, 2 and 3 respectively. The machine would print out these lines in correct horizontal alignment automatically shifting the paper upward after the printing of each plate so that entries appeared equally spaced one below the other. The same plates could be used to produce another type of list in which different lines were used in different order.

The control devices for horizontal paper movement and line selection are made to owner's specifications and are easily interchangeable.

Lateral spacing, which may be changed according to the width of columns in the list, is varied by a control mounted in the attachment. By making small adjustments, the operator can use the attachment for two- or one-column listing.

Adrema Ltd.,
2-10 Telford Way, Acton,
London W.3

Small Office Intercom

THE two stations of the *Kedafon* transistor intercom system provide two-way speech facilities at points up to 1,000ft. apart.

Loudspeaker power is provided by two standard torch batteries—one per unit. Average battery life is 12 months. Installation is a do-it-yourself operation, consisting merely of lightly tacking the connecting flex into place.

Communication is by push-button.



Battery-powered

To contact the substation, the user of the master presses the 'on' switch and the 'speak' button successively. After giving his message, which comes through automatically on the substation loudspeaker, he presses the 'listen' button to hear the reply. At the substation end, there is a single button which the operator presses to speak to the master.

The equipment, low in price, is supplied complete with connecting flex.

Fonadek (Branson) Ltd.,
Knightsdowne House,
Vivian Road, Birmingham 17

More and more people are changing over to.....

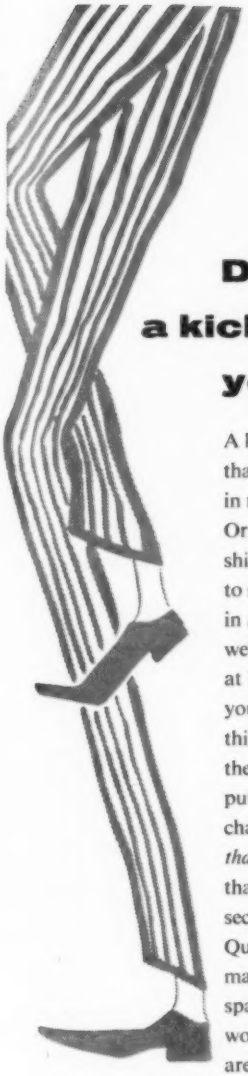


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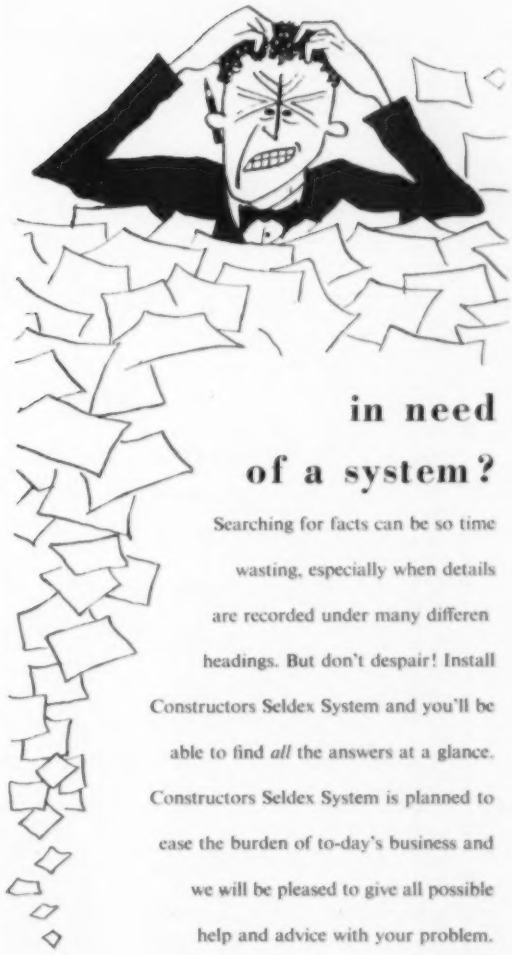
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CONTRACTS

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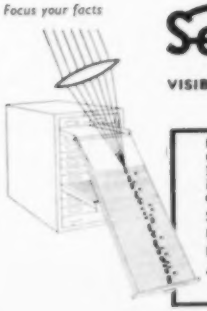
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INDUSTRIAL EQUIPMENT

Vibration Tester

ACCURATE, inexpensive and simple to operate, the *Type 1414* vibration indicator checks machine



Locates machine faults

tools and other machinery for unbalance, worn bearings and misaligned shafts. It also tests anti-vibration machine mountings and helps in the preparation of survey reports on buildings.

The small size of the instrument—8¼in. by 3¾in. by 2¾in.—enables checks to be made where more bulky equipment cannot easily reach. Power is from dry batteries. Weight is only 2¼lb. Its range in terms of velocity, displacement, and acceleration enables it to cope with most vibration problems.

Dawe Instruments Ltd.,
99 Uxbridge Road,
London W.5.

Light Soldering Iron

IDEAL for small assembly and instrument work in the electronics industries is a lightweight soldering iron, the *Wolf No.* 92. It heats up rapidly and maintains a constant working temperature.

For safety, the element is encased in mica inside a steel casing. A special locking nut holds the dull, nickel-plated copper bit, which is easily replaced. The tool weighs only 3oz., is well balanced and sturdy. The handle does not overheat.

Consumption is 25 watts. Models are available for all standard voltages, and also the low voltages of 25 and 50.

Wolf Electric Tools Ltd.,
Pioneer Works,
Hanger Lane, London W.5



Low power consumption

Cheap Packaging

PLYWOOD and fibre board are used to give a new range of drum containers a maximum strength/weight ratio.

Known as *Vendrums*, they are suitable for home or export use. Lids and bases are of plywood; walls are fibreboard. Diameters range from



High strength/weight ratio

10in. to 16in., while the length varies to accommodate content/weights from 56lb. to 168lb. Methods of closure are pill-box lid or a hoop that is stapled into position (cheaper than sealing tape).

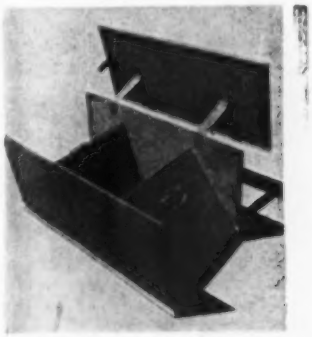
Interiors are smooth so that bag linings are protected. For special resistance to damp, aluminium foil can be supplied as a wall lining. Sizes can be modified to meet individual requirements.

Venesta Ltd.,
Vintry House, Queen St. Place,
London E.C.4.

Compact Container

COLLAPSED, the *Retemba* wooden container occupies only 17 per cent of its normal volume. Already in extensive use on the Continent, it consists of wooden panels edged and supported by non-corroding aluminium alloy extrusions. As a returnable container it saves weight and space. It can be stacked, whether assembled or collapsed.

The panels are of laminated wood, which is immensely strong and



Saves weight and space

weather-resistant. Their surfaces are sheer, so that the full internal capacity can be used. Handles, hasps and hinges are of cadmium-plated steel.

There are two standard sizes: 30in. by 15in. by 15in., weighing 29lb.; and 30in. by 22¼in. by 15in., weighing 37lb. Any size is made to order.

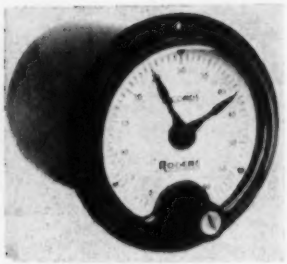
Warwick Production Co. Ltd.,
Birmingham Road,
Warwick.

Process Timer

CONTROLLED by switch or push-button, a new automatic timer has a clock-type dial and is flush-mounted.

The switch can be arranged to reset automatically at the end of the timed period or when a re-setting contact is opened. It can switch one load on or off during its time-scale, as well as switching a second load from the end of timing until the instrument is re-set.

A pulsed output, produced at the end of the timed period, can be used



Push-button control

to set off a second timer. In this way a number can operate according to a programmed cycle, the last re-setting the first.

Seven time-scales are available, from 0-15 seconds to 0-3 hours. During timing, a red hand remains stationary, marking set time, while a black hand shows unelapsed time. The control knob can be made detachable. The contacts handle 3 amps at 440v. or 5 amps at 250v. Weight is 3lb., and diameter 4½in.

Rodene Electrical Co. Ltd.,
579 London Road, Isleworth,
Middlesex.

Miniature Relays

PLUG-IN miniature multi-contact relays are now available. Each requires only about 1¾in. by 2½in. of panel space, so that 36 fit into about 1 sq. ft.

Advantage of the plug-in system is that contacts and springs are not damaged during the initial lay-out wiring operation because only the panel is wired; the relay is plugged in afterwards. Changing faulty relays is easy, and circuits can be isolated one by one to speed up trouble-shooting.

Mercury types are available. A new type is suitable for printed circuits.

D. Robinson & Co.,
58 Oaks Avenue,
Worcester Park, Surrey.

X-Ray Aid

WHERE many radiographs have to be examined quickly the *Maxilume* illuminator will be of value.

The film is placed in a ball-type holder mounted in a clear Perspex bar which enables the extreme edge of the film to be seen. The film is held firmly without scratching.

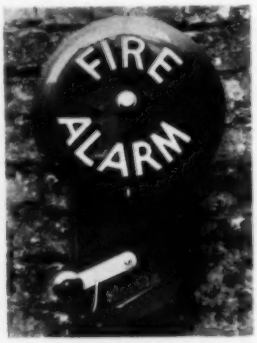
Two 15-watt, fluorescent, colour-matching lamps give an evenly diffused light which does not flicker. No ventilation is required. A photo flood lamp can be fitted when required.

Metropolitan-Vickers Electrical Co., Trafford Park, Manchester 17.

Simple Fire Alarm

A NON-ELECTRIC fire alarm which gives a penetrating warning is especially useful for small factories where an elaborate alarm system is unnecessary.

The alarm is operated by turning a handle. It is completely weather-proof and can therefore be used in or out of doors.



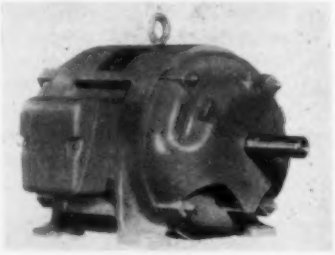
For small factories

Rely-A-Bell Burglar & Fire Alarm Co. Ltd.,
54 Wilson Street, London E.C.2

Compact Motors

IN the new *Brook Type C* range of electric motors, particular attention is given to ventilation. Cooling air is drawn into the ends, guided by deflectors. Special insulation of the windings enables them to withstand sustained overloads. Result is that the motors withstand temperature rises up to 65 deg. C., compared with 40 deg. C. for older designs.

Of smaller overall size than existing types, the new motors are easier to mount in machines and save freight on the complete assembly.



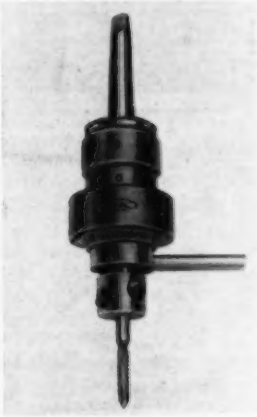
Smaller and lighter

Brook Motors Ltd., Huddersfield.

Tapping Heads

ORDINARY drills are converted into efficient tapping machines by a new range of tapping heads.

The top ring is set to the required torque. The tap is automatically centred. Then the lever is pressed and the clutch takes up the drive. When threading is finished, the lever is raised slightly; the tap is reversed, revolving at twice normal speed; and the tap emerges quickly and cleanly.



Fits ordinary drills

Optical and Mechanical Devices, 3-4 Westhead Chambers, George Street, Kingston Road, Staines, Middx.

Terminal Blocks

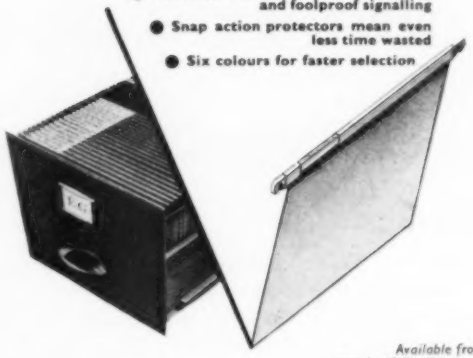
CONDUCTORS up to 25 amp. capacity are handled by a new range of terminal blocks. Normally they are supplied in phenolic resin or P.V.C., but for high temperature applications porcelain units are available.

Creators Ltd.,
Plansel Works, Sheerwater,
Woking, Surrey.

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- Will fit any filing cabinet old or new
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Saves valuable storage space

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or clock work

Machine time is too costly to leave to guesswork. Production schedules must be based upon accurate records of running and idle times. These are provided automatically—and most economically—by Servis Recorders.



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SAVE FLOOR SPACE



In every business, the efficient use of floor-space is of prime importance,and a good business demands an adequate method of storing extra or unused chairs.

The REDRO NESTING CHAIR is a strong, light-weight and comfortable chair which, when not required, can be stored in an absolute minimum of space.

15 chairs, nesting one upon another, can be quickly and easily stacked in about 5 square feet of floor-space.

The REDRO NESTING CHAIR is one of the lowest-priced chairs on the market, and is available in a choice of 12 colours in easy-to-clean stove enamel, or in a chromium-plated finish.

TUBULAR STEEL REDRO NESTING FURNITURE

Write NOW for our illustrated leaflet

REDRO LTD.

(Dept. 28), Cogan Street, Hull

Round-up of New Equipment shown at Catering Exhibition, Olympia

SNACK bar catering of the 'called order' type is the current trend in many industrial canteens, and much of the new equipment at this year's Hotel and Catering Exhibition was on those lines.

Electroway Heaters Ltd., Loughborough, showed the *Griddle Grill*. It is claimed to produce up to 300 fried eggs or 150lb. of steak per hour for a current consumption of 3¾d.



Refrigerated salad shelf and coloured panels distinguish Still's new counter unit

A 25ft. self-service counter with eye appeal has been introduced by **W. M. Still and Sons Ltd.**, London, E.C.1. Perspex shields protect food on display, and the front is decorated with coloured illuminated panels.

The same company showed for the first time a refrigerated milk dispensing unit with storage capacity for two 5-gallon churns.

For the smaller canteen, **Adams and Son (Engineers) Ltd.**, London, S.W.4., have the *Pegasus* snack unit which is only 3ft. wide and 2ft. 11ins. high. It incorporates a griddle plate, boiling burner, twin-pot bain-marie, hot cupboard for 24 plates and a general purpose shelf.

Infra Heat Co. Ltd., London, W.9., showed a low-priced combined deep fat fryer and electric cooker. Claimed to fry, roast, boil and braise, it has automatic heat control. Capacity is 4½ pints.

Occasional soup orders can be dealt with effectively by the *Soupamatic*, (**Modern Metal Products (Catering Engineers) Ltd.**, London, E.C.1.) It heats tinned or cold prepared soup very fast by superheated steam injection, and switches off at the correct temperature. It is attractively housed in a display cabinet.

The *Frymaster* is claimed to deliver continuous 5lb. batches of chips from fresh, raw potatoes in only 4 minutes. Made by **Oliver Tom's Catering Equipment Ltd.**, London, W.6., its design obviates the need for any recovery time between batches.

Another new fryer design was shown by **A. E. Warner (London) Ltd.**, London W.1. This is the *Seifrimatic*, with a basket capacity of 12lbs. A clever timing device lifts food out of the oil when cooked. A smaller model, the *Seifri* 900, has a 16in. basket designed to take long fish whole.

Ultra-fast grilling is possible on the *Grill Master* (**Radiant Heating Ltd.**, London, N.1.) because of a new type of gas-heated ceramic element. This reaches incandescence in one minute and heats evenly all over. Grilling

Catering

the Hotel and

January 22–31

plate means that meat needs no turning, and gas consumption is economical. Capacity: 100 steaks an hour. The *Grill Master Junior* is a smaller version.

Kitchen Equipment

A new potato peeler by **Medcalfe and Co.** (*1950*) **Ltd.**, London, E.C.1., has a 30lb. capacity and is totally enclosed. Called the *C.30*, it features a built-in peel trap, easily removable, silent vee-belt drive and a swivelling discharge door.

The *Ovenator* by **Kitchen Machines Ltd.**, London, E.C.1., combines infra-red elements and steam pressure. It roasts, steams and bakes, and is claimed to be equivalent to two frying tables and two roasting ovens. It also reduces meat shrinkage during cooking and preserves vitamins.

The same firm are showing for the first time a heavy-duty cooking pan on a tilting base which makes emptying easier.

Adams and Son (Engineers) Ltd., London, S.W.4., have introduced the *Star* hot cupboard, very low-priced and either gas or electricity-operated. Capacity is 100 plates (or 24 plated meals). Size is 24in. wide, 15in. deep and 36in. high.

Two new hot cupboards (*Maxted No. 3 and No. 4*) were also shown by G. E. **Bartlett and Son Ltd.**, Hemel Hempstead. Respective capacities are 36 and 48 plated meals, and both electric and gas models are available. The same firm have a new water

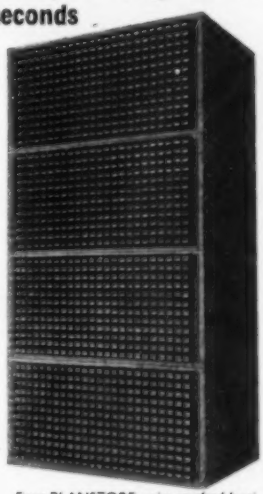
Not only Engineers curse—



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boiler—the *Cleveland*—which is an improved version of previous models, but sells at a very much reduced price because heating control is manual.

Stotts of Oldham now offer the *Minor* water boiler with a 10-pint reserve with automatic regulation. They have also introduced the *Medium* and *Major* boilers, which are larger versions of the *Minor*.

High performance new twin oven gas range—the *Merton*—was shown by **Benham and Sons Ltd.**, London, W.1. The boiling top has four large and four small open flame burners, fitted with spill-proof caps. Oven hinges are concealed, and the whole unit is designed for easy cleaning.

Dawson Bros. Ltd., Woodford Green, have added the *Deluge AA* automatic dishwasher to their range. Taking up little floor space, the machine washes up to 300 meals an hour and switches itself off after each washing cycle.

Smaller Equipment

A continuous toaster was shown by **Simplex Electric Co. Ltd.**, London W.1. Available either table-mounted or with a stand, the *Creda Radiant* can turn out 500 slices of toast an hour.

Kenwood Manufacturing Co. Ltd., Old Woking, have two new attachments to their *Chef* and *Major* food mixers. These are:

1—A continuous juice separator. This extracts only pure juice from fruit and vegetables, automatically ejecting pith, pips and skin.

2—High speed slicer and shredder.

This has four cutting plates, and works to adjustable thicknesses.

New butter spreading machine by **EUK Catering Machinery Ltd.**, Oldham, can deal with up to 45 slices of bread a minute. Design ensures that no butter is lost through dripping or being spread wrongly. Machine can also deal with tea cakes.

New Welbeck Ltd., Brighton, have a new suction cleaner, the *Floor Master*, designed for cleaning large floor areas. Available with either two or three twin-turbine power units.

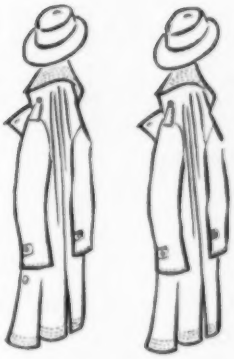
Vending machines for hot foods and drinks were shown for the first time by **Automat Machine Sales Ltd.**, Forest Hill. *END*

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Year	Conversion Factor	Year	Conversion Factor
1913	4·19	1935	2·91
1919	1·93	1936	2·85
1920	1·69	1937	2·71
1921	1·86	1938	2·68
1922	2·29	1939	2·60
1923	2·39	1946	1·74
1924	2·39	1947	1·65
1925	2·39	1948	1·53
1926	2·44	1949	1·49
1927	2·50	1950	1·45
1928	2·53	1951	1·32
1929	2·55	1952	1·21
1930	2·65	1953	1·18
1931	2·85	1954	1·15
1932	2·91	1955	1·11
1933	2·98	1956	1·05
1934	2·98	1957	1·02

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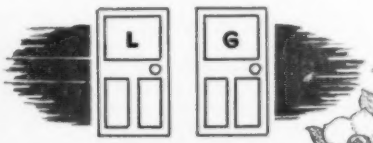




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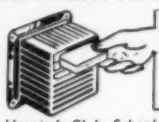
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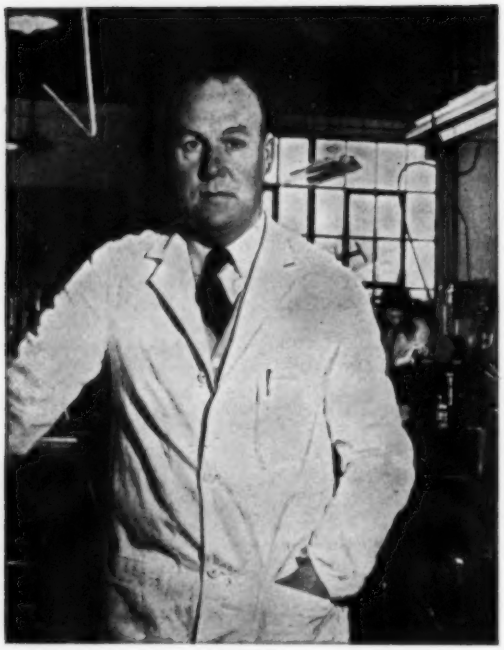
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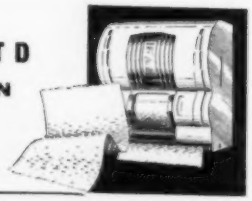
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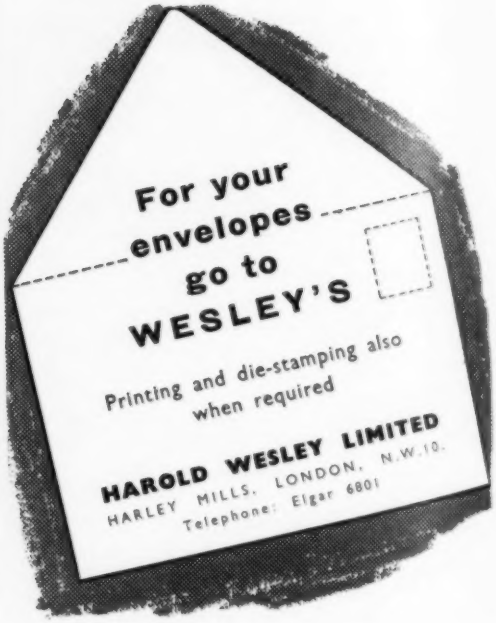
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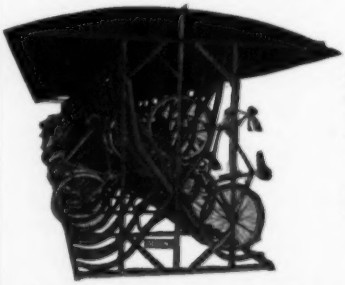
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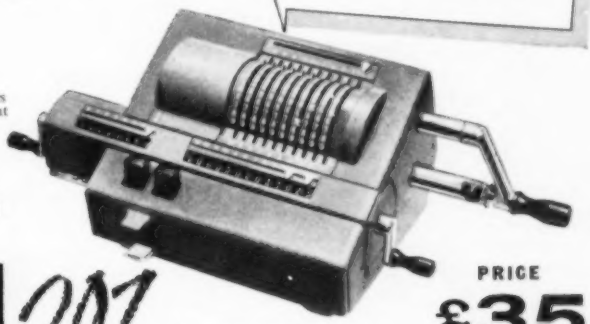
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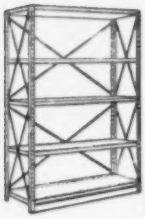
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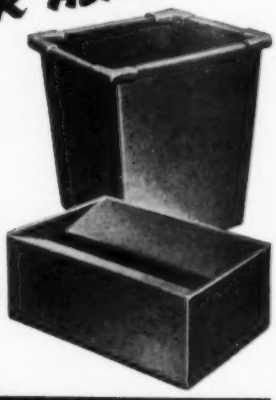
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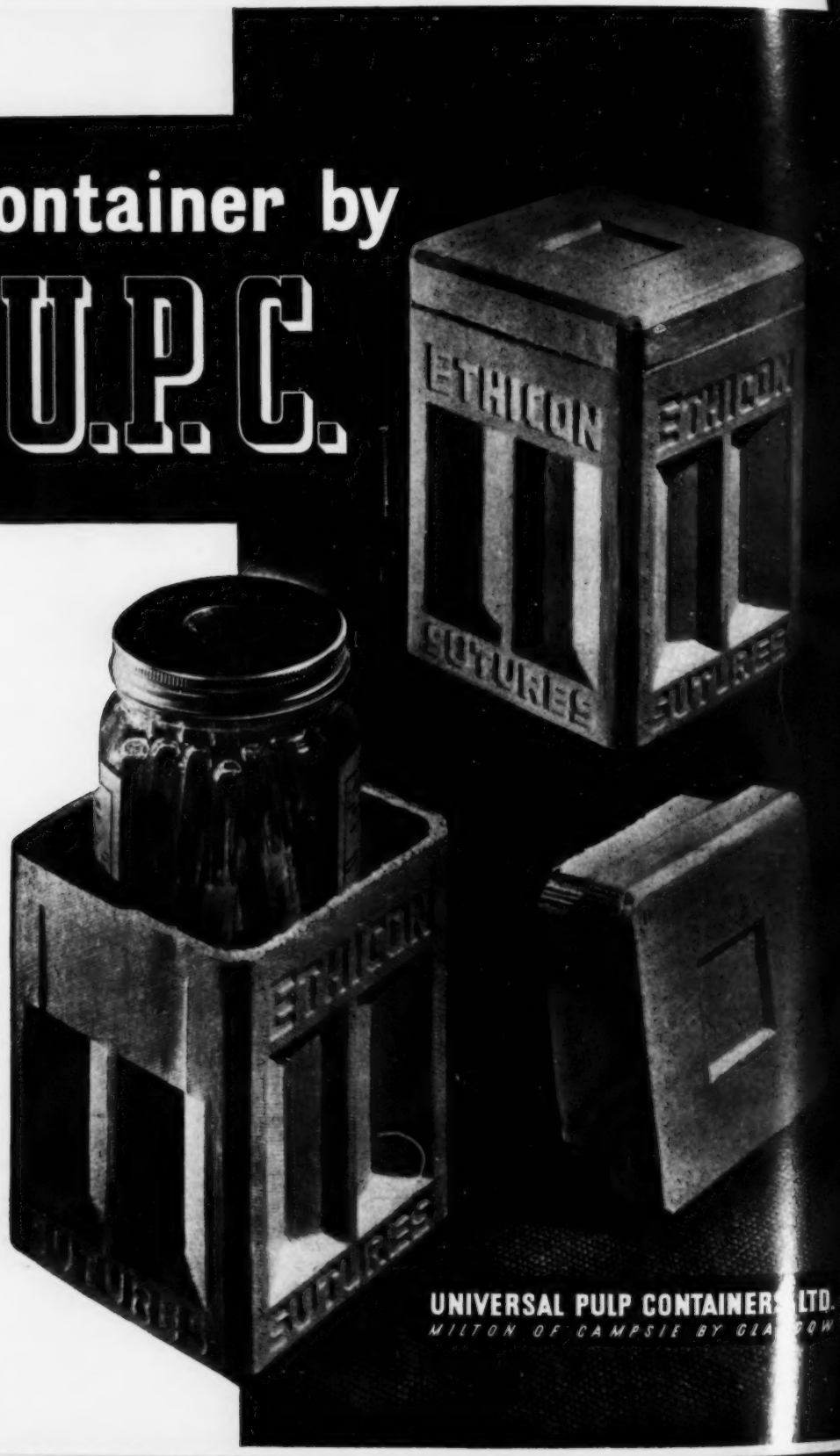
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